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ARMY INFORMATION DIGEST

OFFICIAL MONTHLY MAGAZINE of the DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern.

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ARMY TANKS and vehicles, too, are subjected to the soldier's equivalent of the confidence course and road march, to test their staying power in combat. Numerous field trials are described in the article "Ordnance Testing Shows the Way."

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First Annual Meeting of the Association of the U. S. Army at

THE ARMY'S ROLE IN TH

The Honorable Wilber M. Brucker
Secretary of the Army

Nobody has yet invented a gun, a missile, or a gadget to replace the soldier himself. And nobody has devised an electronic substitute for the teamwork that chiefly distinguishes an army from a rabble. As a matter of fact, as war has become ever more complex, trained soldiers and perfect teamwork have steadily become more necessary.

* * *

The all-important mission of the Army is to uphold the interests of the United States in peace, in cold war or in a shooting war. This means that the Army must be mobile and flexible—prepared to move on short notice by land, sea, and air to fight any enemy, any time, any place. Paramount in peace or in cold war is its mission to deter aggression —to prevent war by being thoroughly prepared for it. If the Army is to be an effective instrument of deterrence, the evidence of its ability to fight—and to win—must be so convincing that any potential enemy knows in advance that aggression on his part would not pay.

* * *

Nothing has occurred on the world scene that diminishes the fundamental role of land forces. By that I do not mean that the weapons and tactics of warfare have not changed, for they have always been in process of change and will continue to do so. But the ability to take and hold ground, and control people who live on the ground, remains a major factor in a nation's power. When it comes to military forces, nothing has appeared that can act as a substitute, or guarantee to do the job of soldiers. A look at the realities of life today will demonstrate that land forces are a prime element in any nation's security structure.

* * *

One who champions the cause of others must himself be strong. . . . It is not enough to recognize injustice. We must be ready, willing and able to enforce justice.

* * *

For a number of years now there have been some assertions that the Army's role has become one of subordinate importance—that atomic bombs have rendered ground troops relatively unnecessary. This is wishful thinking. As in the past, the United States Army will bear the brunt of any future conflict in which the Nation engages. The Army will be a dominant force in the struggle and the Army will provide the ultimate force by which victory is achieved.

rm member were made by top-level Army spokesmen at the
rm at Fort Benning, Georgia, where discussion centered on

IN THE MODERN WORLD

General Maxwell D. Taylor
Chief of Staff, United States Army

The Army exists to prevent the greatest of human tragedies: the occurrence of general war. If that deterrence of war is unsuccessful, then the Army is ready to fight and win the war, upon the outcome of which the survival of our Nation depends. Furthermore, it is ready to fight it with a view to establishing a better world, as the objective of the postwar peace.

* * *

In common with its sister Services, the Army is bending every effort to increase its deterrent strength. By deterrent strength I mean visible, tangible evidence of military effectiveness, which will remind a potential aggressor that any attack on the Free World will be resisted, and resisted successfully. This strength must be real. It cannot be phony. It cannot be a bluff. There must be real muscle and not merely shoulder padding. It is the obvious Big Stick, not the resounding tread which produces true deterrent effect.

* * *

One may ask, how does the Army contribute to deterring war? It contributes to deterrance by its oversea deployments, where the American soldiers arrayed along the Iron and Bamboo Curtains are a constant reminder to an aggressor that if he moves forward, he will be met by the American Army. . . . At home, the Army contributes to deterrence by the evident soundness of the Strategic Reserve units of the standing Army which are ready to reinforce our oversea deployment; by the effectiveness of our civilian Reserve Components, who are the ultimate reinforcement for any prolonged military effort.

* * *

Flexibility is a unique characteristic of Army weapons—its arsenal varies from the MP's pistol to the kiloton blast of its atomic weapons. It is able to distinguish between friend and foe, to adjust the punishment to fit the crime. It is able to act with due regard to the postwar conditions which military operations will create.

* * *

Army men [are] particularly conscious of our obligation to wage war with measured destruction. That attitude is reflected in the family of weapons of which we dispose—a complicated family, it is true; but like a well-equipped orchestra, able to strike the appropriate note or chord at the appropriate time.

Lieutenant General Walter L. Weible
Deputy Chief of Staff for
Operations and Administration
United States Army

To meet the threat of aggression and the needs of world peace, the United States has adopted the principle of collective security as an instrument of national policy. . . . In giving substance to the collective security principle, the United States has entered into agreements around the world which involve rendering assistance to other nations and working in a defensive partnership with them. . . . If called upon to honor all these commitments, the United States Army will have its hands pretty full.

* * *

What have we in being to meet them?

On 1 July 1955 major Army forces consisted of 20 divisions and 12 regiments within the total strength of approximately 1,112,000.

At the end of this fiscal year the Army must reduce to a strength of 1,025,000 with a consequent change in the troop structure.

* * *

When an Army is reduced in size its strategic deployment is severely affected. If a compensating strategic mobility is not then provided its deterrent power is sharply diminished. Thus, our capability to deter local aggression could be extended by provision of greater strategic mobility. Our capability of deterring general war is likewise affected, but fundamentally because of our reduced strength and the lack of full readiness of our Reserve Components.

* * *

Our capabilities to fight local wars, provided there are not too many of them going on at one time, are obviously greater than our capabilities to fight a general war, but, because of the limited state of tactical and strategic mobility, timely intervention might be difficult. Some of our Reserve forces might be needed to fight a local war and all of them would be needed more than ever to fight a general war.

* * *

The Reserve Bill recently passed by the Congress . . . provides a Ready Reserve of 1,692,335. It provides for compulsory participation of service personnel who enter the armed forces after enactment of the law and who subsequently are separated and become members of the Ready Reserve. Because of the 6 months active duty for training feature, it establishes a new mission for the Active Army. We *must* make the new Reserve Forces statute work effectively because we rely heavily on our reserve structure in the event of an emergency.

* * *

There seems little likelihood that Army missions and commitments will be diminished in the foreseeable future. On the contrary, they may even be increased. So, the maintenance of a modern, versatile, mobile and hard hitting Army is and will continue to be an essential aspect of America's preparedness program.

Lieutenant General James M. Gavin
Chief of Research and Development
Department of the Army

There is no easy way to win wars, no super-weapon to guarantee victory. In the uncertain world of tomorrow, the United States faces the need for greater military preparedness than ever before.

* * *

The Army is vitally concerned in solving the problems raised by the introduction of nuclear weapons on the battlefield. Our forces in Europe and the Far East are already equipped with atomic artillery. We are training to be prepared to use these low-yield weapons on military targets in case the need should arise, and new organizations and tactics are being developed for the "atomic battlefield."

* * *

The new missiles have almost unbelievable possibilities both for antiaircraft and antitank purposes and for all kinds of other enemy targets. The potentialities of such missiles if or when equipped with nuclear warheads of various sizes, stagger the imagination.

* * *

To fight successfully on the battlefield visualized for the future, our Army must be mobile not only on the ground but in the air. Units must possess a high degree of mechanization and improved cross-country mobility with lightly armored personnel and cargo carriers. The majority of supplies for the battle area should be delivered by aircraft of the assault cargo and convertiplane type, and tactical transport of units into and within the battle area must be accomplished by basic reliance placed upon aircraft and fast moving naval vessels.

* * *

The Army should be capable of employing atomic firepower at the battle group level, of engaging and defeating a quantitatively superior enemy through superior tactical and logistics mobility, vastly increased firepower capability, battlefield intelligence, control and command facilities. This capability to employ the destructive effects of nuclear firepower, selectively, places the Army in the unique position of being able to defeat the enemy's land forces and control the sources of his land power without destroying the foundations upon which a firm and lasting peace can be built at the cessation of hostilities.

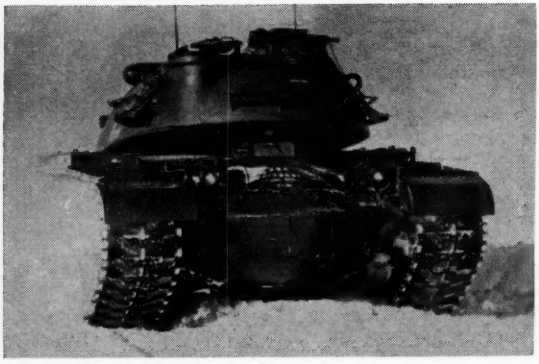
* * *

To meet the challenge of new weapons of war, our concepts of time and space have been expanded. The combat zone in an atomic war will be vastly extended in depth. Combat action will be characterized by fluidity. Units will be dispersed in space, but through greatly increased mobility will be capable of greater concentration for concerted effort in terms of time. On the future battlefield the decisive margin or strength will fall to the side possessing superior mobility to exploit the effects of weapons yielding greatly increased firepower.

From the heat of Vapor Lock Gulch to the chills of Hudson Bay, if a vehicle can take it—

ORDNANCE TE
SHOWS TH

Lt. Col. W O.



Amid clinging snow . . .

WILL THAT Army truck, jeep, tank or command car move into action at 125 degrees F. and also at —65? Will the engine stand up under varying climatic extremes? Will ignition systems, tires and radiators perform properly? Will the vehicle take a 60 percent grade, work in sand or mud, and withstand the punishment of the most rugged field conditions?

These are a few of the questions about automotive equipment that are being answered by Army Ordnance testing stations from Vapor Lock Gulch at Yuma, Arizona, where temperatures soar to 124° F., to Fort Churchill on the shores of Hudson's Bay where for several months each year the mercury sinks far below the zero mark daily.

Continual testing of military equipment—from inception of the idea for a unit or component through its entire life—is more important than in civilian industry, for the military vehicle must necessarily operate under more adverse conditions than does its civilian counterpart.

A breakdown or failure which would merely mean loss of time to a civilian firm may well mean loss of lives to an army in the field—perhaps loss of the crucial battle itself. All of this becomes increasingly important as the U. S. Army puts more emphasis on speed and movement in its battle doctrine.

FURTHER, by proper testing before acceptance, the military

LIEUTENANT COLONEL W. O. MILLER, Ordnance Corps, is on duty with Tank and Automotive Branch, Research and Development Division, Office of the Chief of Ordnance.

CE TESTING
WS THE WAY

ol. W O. Miller

ow . . . and desert heat

leader can be assured of having the superior equipment so vitally necessary to overcome the numerical superiority of a possible future foe.

Still another factor—but little appreciated by those who may consider only the costs of testing—is the fact that military vehicles that fail in the field must be modified or even withdrawn. This puts a heavy strain on the entire logistic system; for a modification program means drawing up revised specifications, withdrawing defective parts from a world-wide supply system and then distributing new parts as replacements. This adds up to additional shipping and maintenance effort, changes in the production line and retooling of civilian factories—and then further tests are required to assure that modifications are working properly.

Testing in some form begins when the original idea for an item or for a component is first conceived; it continues until production is completed—and even then it does not cease. Throughout the life of any item of Ordnance materiel, improvements, savings, greater efficiency, and wider uses are continually being sought. Even now, improvements with resultant savings are being sought to meet changing conditions in the field.

ONCE an idea is born, testing in one form or another is usually mandatory. If the idea is practical, the item undergoes many tests both before and after it is mass produced. Some of the more important types of tests include:

RESEARCH. Basic research often leads to an idea for some new item. At first the idea may be nebulous and appear impractical but after

systematic test procedures some useful idea or knowledge may come forth.

DESIGN INFORMATION. This generally is confined to seeking information to assist the designer. Typical are tests to determine fatigue life, safety factors, standards, characteristics of metals.

ANALYTICAL. In the Ordnance field, this is generally a laboratory test that analyzes fuels, metals, paints, oils, anti-freezes, rubber compounds and others. It normally is employed as a check on specifications or to determine composition of some particular compound.

DEVELOPMENT. This type is applied after the vehicle or component has been perfected to the designer's satisfaction, to determine if the design is acceptable from the military standpoint. This phase may be carried on for a long time and may include development to improve existing models.

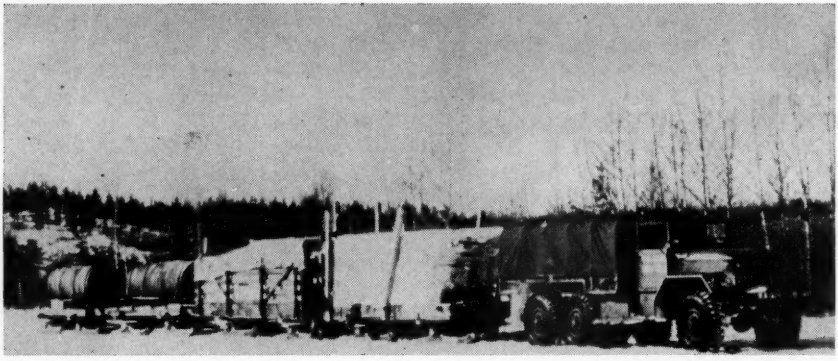
ENGINEERING. Actually an extension of development testing, this type establishes exhaustive engineering and endurance tests to obtain complete operating, performance and engineering data. Usually conducted at Aberdeen Proving Ground, Maryland, they bring to light any modifications necessary before sending the item for test to the ultimate user, Continental Army Command (CONARC).

CLIMATIC. Rigorous environmental tests investigate features that distinguish performance of military vehicles from commercial types. Hot and cold room testing is conducted in laboratories prior to climatic testing at winter, summer and desert sites such as Yuma, Arizona, Fort Churchill, Canada, or Big Delta, Alaska.

USER. Following engineering and climatic tests, the item goes to the appropriate CONARC Board. Here tests are conducted on early pilot models and then several vehicles undergo troop tests. Success or failure here is tantamount to acceptance or rejection by the Army.

INSPECTION CONTROL. Even after acceptance and production, Inspection Control Tests (ICT) frequently reveal defects not previously ap-

Across Arctic tundra . . .



An M54 Cargo Truck tows sleighs in winter tests at Flin Flon, Canada.

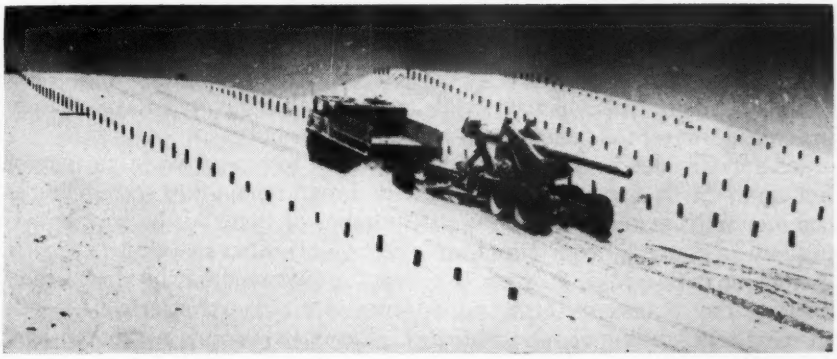
parent. These usually are caused by deviation from specifications, lack of quality control and other hazards of mass production which demand constant attention.

AT EACH step of the way in all these types of tests, a weeding-out process occurs. Each individual test is designed to eliminate deficiencies in design and operational efficiency. By the time any product passes all of them, it should be both efficient and reliable.

while doing so. Therefore the military requirement may call for ability to climb a 60 percent slope, and ability to operate at 30 degrees from the horizontal both fore and aft and each way in the transverse direction. This means that large, rugged power plants are needed. Because extra demands for electrical energy are inherent in military vehicles, a 24-volt electrical system is generally called for.

Hand in hand with the need for more electrical power goes a need

. . . and desert dunes



Air cleaning equipment undergoes exhaustive test in this Cargo Tractor.

A modern combat vehicle must be able to operate over all types of terrain and under many temperature extremes. Such factors as speed, general performance, fordability and other military requirements frequently make it necessary to deviate from commercial designs.

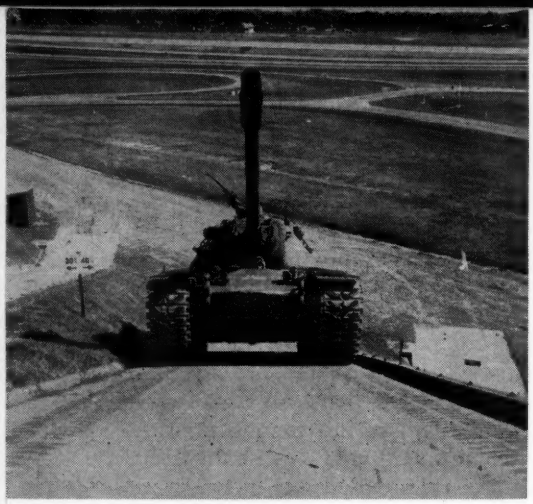
A closer examination of some of these factors provides a better understanding of the many problems involved in testing.

THE military vehicle must be able to traverse difficult terrain, not only traveling over it but also firing various weapons from acute angles

for generators of sufficient capacity to meet combat vehicle requirements. In some instances these must be specially designed.

Not only must military vehicles travel overland—in many cases they must cross rivers and swamps. Therefore sealed electrical systems must be provided. Obviously, too, fordability requirements may involve many other special adaptations such as waterproofing and elevated exhaust pipes, for instance.

The necessity for cross country travel also means that combat vehicles frequently must operate under extremely adverse conditions, in



Scaling steep hills . . .

A T43 tank, armed with a 120-mm. gun, easily negotiates a 40 percent grade on the test course.

dust and dirt and rocky terrain which seldom if ever are encountered by a civilian vehicle that sticks to good roads. This in turn means that air cleaners must be specially designed to insure maximum engine life.

Special steering mechanisms and braking devices often must be provided for vehicles in the 10- to 50-ton class. Such systems utilized in commercially available earth-moving and tractor type equipment are extremely bulky; also, they do not possess the necessary high-speed steering and braking characteristics so necessary in military vehicles.

ABILITY to operate in extremes of climatic conditions means that air cooled engines, special heaters, larger radiator sections, specially designed gearing and belting, extra capacity ducts and grills for proper flow of air, and other necessary accessories, must be supplied. Because most such items are not commercially available they must be specially designed and built.

Safety factors must be incorporated to insure that the military vehicle will be able to withstand the rigors of field operations. This often means that components must be made stronger than their commercial counterparts. Sometimes a new or highly modified item results.

Standardization is one of the most important factors to be considered in the design stage. As an example of the progress that has been made in this area, some 32 types of electrical switches were employed during World War II while only four now are utilized. Similarly the number of generators has been reduced from 266 to 7, bulbs from 113 to 31, starting motors, from 63 to 8. Thus considerable savings have already been effected.

Many tests are made as part of the broad scale effort to reduce the number of items in the supply system. This often makes it necessary to use items differing from their commercial counterparts.

Besides these main points, there are many miscellaneous considerations—high-altitude operation, fungus proofing, radio suppression, special oils and others. All of these things must be considered, planned and tested in advance to determine their adequacy.

EXTENT of the entire testing program may be visualized when it is considered that many combat vehicles contain up to 85,000 individual parts that make up the functional components. Each vehicle is dependent on well developed components; indeed, it is only as good as the weakest one. And with integrated systems such as the family of air-cooled engines,

. . . and climbing walls

An M48 tank climbs a three-foot wall on a test course at Aberdeen Proving Ground.

torque converter transmissions and others, it is essential that every component be as reliable as the next.

To complete production of an Ordnance component from inception to finished item often requires a period of several years. As an example, a new type engine employing, say, a new combustion principle, begins with a basic idea. Whether it originates with an individual or a big laboratory or firm, the idea is "funneled" through Detroit Arsenal where it is formalized and evaluated. Based on this evaluation, a decision is made as to the proper course of action.

If the proposal looks promising, a contract will be let for construction of a single cylinder engine. Detroit Arsenal currently has over four hundred contracts with 324 educational institutions, research organizations and industrial concerns.

THE hypothetical new engine undergoes a series of design information and development tests. First comes design, construction and test of the single cylinder engine. If this proves successful, a multiple-cylinder engine will be built and eventually pilot engines will be built. All of this may take as much as thirty months.

The pilot engines will be tested on dynamometer stands for periods up to fifteen months. Then several pilot engines will be built and delivered to Detroit Arsenal for testing on dynamometers, to include both hot and cold room tests. This involves another six months.

If all continues to go well—and normally many modifications may be suggested and incorporated along the way—an engine will be installed in a vehicle for development tests. This probably takes still another nine months.

Engineering tests follow at Aberdeen Proving Ground. Here several new components may receive simultaneous tests in a complete vehicle to save time. Even so, these engine tests may take another nine months.

Then follow cold and hot room checks, climatic tests at Yuma and Fort Churchill, high altitude tests at Fort Carson, Colorado. Another seven months is required for this phase.

Finally the vehicle is sent to one of the CONARC boards for complete user tests. This may require as much as seven months. This is followed by Inspection Control Tests on a small percentage of vehicles being turned out by the factory—and this entails another month at least.

Thus, altogether, some eighty-four months may be required for combined design and test of a proposed vehicle design. Actually this is an optimistic figure since the

total time usually is closer to nine years for complete development of an engine.

WHEN faced by necessity, development time may be accelerated by application of flexible test methods which permit some phases to be carried on simultaneously. Usually this costs more, however.

Modern facilities and large land areas are required for operational tests. Equipment ranges from small expendable items like thermocouple wires to portable dynamometers that cost $200,000.

At Detroit Arsenal facilities are available to test the majority of automotive components and to permit specialized tests on the complete vehicle. Included are such laboratories as X-ray, photo, electrical, mechanical, dynamometer, gage engineering, applied physics, fluid flow, fire control, tire test, battery, rubber, chemistry, fuels and lubricants, and carburetor and air cleaner.

Model shops, fording basins, high speed test tracks and slope courses also are part of the facility. A service shop and low and high temperature test cells are also included.

TESTS at Aberdeen Proving Ground differ from those at Detroit Arsenal in that the complete vehicle is now tested as a unit over various types of terrain, with no further control by the design agency. Here testing of a complete tank and its individual components, including automotive and firing tests, can be accomplished.

All of the tests in laboratories and on proving grounds are designed to answer questions as to performance and efficiency of automotive equipment. But it is the climatic condition tests at Vapor Lock Gulch and Fort Churchill that cause both the designers and test personnel the greatest concern. To design equipment that will function properly under these conditions is a task of major proportions.

Through marsh, mire . . .

An M41 tank proves its cross-country capability in swampy terrain.

VAPOR LOCK tests and studies carried on at these sites are extremely important. Because gasoline must be mixed with air in order to be readily combustible, engine fuels must obviously be sufficiently volatile to form combustible vapor at low temperatures. But excessively volatile gasolines are troublesome because they promote vapor lock—a condition due to formation of vapor in the fuel lines that restricts the liquid flow. This results in a lean mixture which may cause engine failure.

To determine the vapor lock tendencies of a given engine, vehicles must be properly instrumented and tests must be conducted. Often simple changes in the routing of fuel lines will alleviate the condition but sometimes drastic changes are required.

In extremely cold weather, many strange variations occur. Storage batteries lose efficiency; air hoses fail; rubber on tires and wire insulation becomes brittle and cracks; ice crystals form in fuel tank and lines. These are but a few of the problems on which research is continually carried on and to which testing helps provide the answer.

Cooling the engine becomes a major problem as atmospheric heat increases. Similar problems are encountered in cold weather operations. These problems are accentuated in combat vehicles because the power package often is enclosed in an armor plate compartment which makes proper ventilation difficult at any time.

Valuable preliminary data usually can be procured from the test stand. But actual installation in the vehicle is necessary to insure that the engine will work under field conditions in all temperature ranges.

A continual battle is being waged to reduce fuel consumption, and here again extreme climatic conditions call for rigid testing. Reduced fuel consumption not only saves fuel costs; it also means a saving in

. . . and sandy wastes

Full throttle cooling tests are run off at Yuma Test Station.

transport trucks, depot handling, and fuel tankers for oversea shipments. A saving in manpower is another by-product as fewer personnel are needed all along the line.

Engines and transmissions undergo many laboratory tests, followed by test vehicle runs over standard courses where performance is compared with other vehicles. Each component is thoroughly tested to determine if its overall efficiency is increased as design changes are made. These include not only engine and transmissions, but improved track and suspension systems.

ONE important test which has no counterpart in industry is the firing trial. Here the ammunition, gun-sighting system and the traversing system are brought together for final evaluation after each component has been tested individually.

Precision tests are necessary here because the controls must be finely calibrated. Hydraulic controls in a tank, for instance, must move a 7-ton turret from .06 degrees to more than 4 degrees a second.

The range finder also demands delicate testing. Live ammunition is utilized, and the entire combination must enable a tank gunner to hit targets, both stationary and moving, at distances up to 5,000 yards with accuracy.

Tests determine the fighting ability of the tank by answering numerous questions of fire control, number of first round hits that can be made, reliability of the entire system after cross country operation, and many others.

FROM all of this it may be seen that the plan for testing Ordnance automotive materiel is well conceived. If conducted according to the prescribed plan, a good product will result. If deviations from basic procedures are permitted to occur, a loss in time and money can be expected in the long run. Moreover, an inferior product will have been delivered to the commander.

It is therefore the continual aim of the Ordnance Corps to maintain superior test standards so that only the best automotive equipment will be supplied to the Army.

Transport in the Arctic

Divided into two task forces, three thousand specially trained Army troops discharged more than 200,000 tons of supplies at more than 50 locations along the Arctic coast in recent operations supporting construction of the "DEW Line," northernmost radar net spanning the North American continent.

The two task forces—one working from the Atlantic side and the other from the Pacific—used some 37,000 tons of cranes, bulldozers, fork-lift trucks, landing craft and special cargo handling equipment in the operation.

Army Engineers, Quartermaster, and Chemical Corps troops, were attached to Transportation Corps units to execute the mission in support of the Air Force.

Organization of a Transportation Sled Company (TOE 55–38), reflecting new operational concepts for overland transportation in arctic areas, is presently under development at the Transportation School, Fort Eustis, Virginia. The unit will be equipped with large over-snow tractors, each towing four to five 10-ton sleds. These self-supporting sled trains will transport their own crew quarters, mess, communications, maintenance facilities and fuel requirements. The new companies will have their own aerial and land reconnaissance and rescue teams and will normally operate over prepared trails in areas which may be inaccessible to other forms of transportation.

HURRICANES AND HIGH WATER

Colonel W. F. Powers

THIS SEGMENT of the hurricane-flood story begins at a White House conference about 1700 Tuesday, 23 August 1955. The deluges following Hurricanes Connie and Diane had killed two hundred persons, inflicted property damage of 1½ billion dollars, flooded and torn up some of the most productive areas of New York, New Jersey, Pennsylvania, Massachusetts, Rhode Island and Connecticut.

The President had inspected the six-state area that morning by plane. Grieved and concerned, he proclaimed that a major disaster existed, under provisions of Public Law 875—81st Congress. Thus he committed Federal disaster relief power to the flood clean-up. He added a personal order: "Cut red tape; get rehabilitation rolling."

That's what the White House conference was doing. Present were representatives of the President, Federal Civil Defense Administration, Departments of Defense and Army, Office of Defense Mobilization, Bureau of the Budget, and many others.

FCDA Administrator Val Peterson recalled the assistance rendered by the Army Engineers in beating

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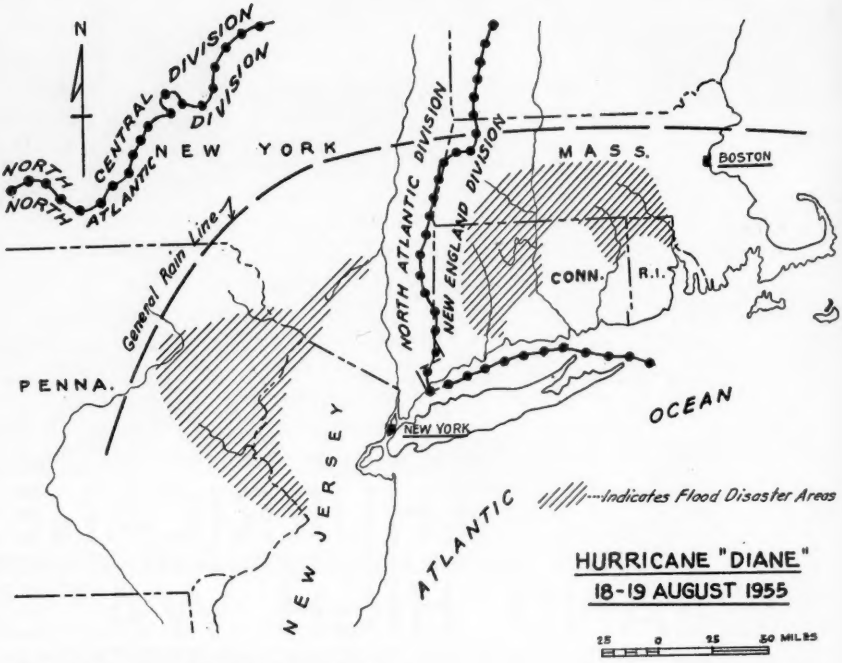


back the great 1952 Missouri River flood. Only the Corps, he maintained, was capable of carrying out FCDA responsibilities for removing debris and hazards to health and safety, and for emergency restoration of public facilities.

The conference quickly agreed that here was a job for Army Engineers. With the President's approval Administrator Peterson issued an on-the-spot delegation of authority: The Corps would perform the major part of flood clean-up and temporary restoration work. Bureau of the Budget and Congressional leaders had already ruled that Engineer funds could be used and reimbursed later. Paperwork, too, was left for later.

Secretary of the Army Wilber M. Brucker had made two inspection flights to the devastated areas on 20 and 22 August to expedite the Army's assistance. Lieutenant General S. D. Sturgis, Jr., Chief of Engineers, was at the scene 23 August making his own aerial reconnaissance. Action in a hurry was what he wanted, he told his staff.

In the few minutes it took Engineer representatives to drive from the White House to Office of Chief of Engineers near the Pentagon, the job was underway. Well-laid and repeatedly tested standing operating procedures slipped quickly into gear, directed by Engineers who were old hands at fighting floods. Telephone calls triggered similar SOP's in the North Atlantic and New England Engineer Divisions. The Engineers were rolling.

THIS was an extraordinary flood, they already knew from first reports of river stages, casualties and damages. Some experts compared it with the biblical Deluge, suggest-

ing the Operation Noah code name given the rehabilitation mission.

Rain from Hurricane Connie, six days before Diane, had saturated the ground, filled swamps, lakes, reservoirs. The record amount of water Diane dumped 18–19 August —20 inches in some spots—produced a high-velocity runoff of as much as 189 cubic feet of water per second per square mile of drainage area. In an hour that would be more than 680,000 cubic feet, 21,000 tons.

Streams burst their banks like exploding boilers. The upper Lehigh crested six feet above its greatest flood of history. The Delaware swelled to a stage unknown since the white man came to the valley. Normally placid rivers like the Naugatuck, Quinebaug and Housatonic suddenly became destructive monsters.

This was a killer flood, cruel, violent, different from the usual gradual rising of water. It raced out of the hills, ripping, overturning, smashing homes, streets, bridges, factories, utilities, even a graveyard, using their debris to scour the narrow river valleys to make more debris in a chain reaction.

"It seemed like the end of the world," sobbed a Naugatuck woman whose home disintegrated.

"The worst destruction I've seen this side of war," the Chief of Engineers called it.

REHABILITATION on this scale was a new mission for Engineers, even after more than a century of rivers and harbors work. Through Congressional action over the last two decades, the Corps has been given responsibility for national flood control. (Already some 3 billion dollars worth of projects have prevented 7½ billion dollars in damage.) Under the authorities contained in these Congressional actions, the Engineers went into action immediately when the floods struck, engaging in emergency flood fighting and rescue work.

As one illustration among many: A hydrology expert of the New England Engineer Division reconnoitered the flood on the Blackstone River up-stream from Woonsocket early on the morning of 19 August. He found the river still rising, already over record heights of 1927 and 1936.

He sped to Woonsocket and warned the Mayor and Civil Defense Director that within hours the flood would sweep low-lying sections where there were 1,360 family homes and many factories. Civil Defense immediately evacuated the families to safe high ground. The flood came just as the Engineers predicted and destroyed those low-lying sections—but it claimed no lives.

TRUE, the Engineer relief role had been temporarily expanded in the 1947 Texas City explosions and fire which claimed 500 lives and $50 million in damage; and again in the 1949 Great Plains blizzards when Operation Snowbound liberated 177,000 persons from snowed-in homes, opened 92,000 miles of roads, and provided four million head of marooned cattle with food.

But in this new disaster, the Federal Government was stepping in to accomplish and direct temporary recovery operations, as contrasted to relief operations.

In FCDA Disaster Order No. 1, Administrator Peterson formally as-

Storm and Flood

ABOVE—*High water at Worcester, Mass.*

RIGHT—*Wrecked factories at Woonsocket, R. I.*

signed primary responsibility to the Secretary of Defense. Responsibility for the assigned mission was forthwith delegated to the Secretary of the Army, and the Chief of Engineers was directed to carry out the task.

TO FULFILL both its civil works and military construction responsibilities, the Corps is organized in 11 Engineer Divisions further divided into more than 40 Engineer Districts. These are organized geographically so that boundaries conform generally with river basins and watershed lines. This decentralized organization—virtually a "construction-organization-in-being"—has at its command a thorough knowledge of local physical features, local resources of manpower and materials, and local construction industry capabilities.

Each district is staffed with key engineers and administrators trained in all engineering skills and experienced in heavy construction methods. It can recruit and expand around existing experienced forces; obtain specialized knowledge for any unusual engineering tasks; construct by either hired labor or supervision of contract forces; procure real estate; perform necessary fiscal services; and handle its own supply and administration.

Thus, the rehabilitation mission was assigned to a fully integrated planning, engineering and construction organization already in being and ready to go. Corps of Engineers personnel simply transferred, smoothly and effectively, all the skills and experience gained in great construction works of peace and war to the new mercy mission.

THE CHIEF of Engineers called

on several hundred of his most seasoned flood fighters from the Division and District Engineers throughout the country for immediate reinforcement of the North Atlantic and New England Divisions. Forty-eight officer students of the Advanced Class at The Engineer School, Fort Belvoir, Virginia, were dispatched by train and plane to the disaster areas, and supplemented their classroom course with practical work in the muck. Every request for reinforcement was met.

Shortly after midnight of 23–24 August, General Sturgis completed his estimate of the situation and determined his plan of operations. The Engineers would carry out the major part of the rehabilitation task through contracts with local architect-engineers and construction firms, using local labor and equipment. Thus he exploited the Engineers' strong point, for they are accustomed to use the huge potential of the American construction industry. The first priority—cleaning up and clearing debris—began immediately without further detailed planning.

Take Putnam, Connecticut, as an example. Water had washed out both approaches to the bridge to the town's only hospital. The Engineers gave a contractor a letter of intent to enter into a contract. By 2300 hours the same day he had seventeen 10-ton trucks on the job. Working night and day in two 11-hour shifts, the contractor's crew closed the washouts with 25,000 cubic yards of fill, and opened the bridge in two days.

THE WORK went just as fast

After the Deluge

ABOVE—*Railroad bridge near Putnam, Conn.*

RIGHT—*Rampaging river damage near Putnam.*

RIGHT—*Removing house from river bank, Collinsville, Conn.*

BELOW—*Repairing ruined bridge, Providence, R. I.*

Cleanup in Progress

Clearing house from street, Southbridge, Mass.

elsewhere. By 24 August, the Chief of Engineers reported that some 20 area offices had been set up.

Operation Noah showed a daily increase in field activities. By 10 September, work was in progress in 151 towns, 89 contracts had been completed, and 333 were in progress. At the peak of operations, contractors' employees numbered 3,325, while 1,405 items of heavy equipment were in use. By 14 September, the peak load was past.

Typical work accomplished included searching for flood victims, repairing bridges, clearing streams, rehabilitation of schools, road repairs, decontaminating streams, debris removal, restoration of stream channels, water line and sewer repairs, and repairing dams. Some 30 Bailey bridges were provided.

Two weeks to the day after the mercy mission was assigned, Secretary of the Army Wilber M. Brucker was pleased to write General Sturgis: "I have followed with pride and deep satisfaction the performance of the Corps of Engineers during the recent major flood disaster. The Corps of Engineers acted quickly and resourcefully, thus saving lives, relieving human suffering and preventing even greater damage."

WITH THE Connie-Diane campaign in the mopping-up phase, the Chief of Engineers turned his attention to another area of the flood front—namely, flood prevention and steps to strengthen defenses against another hurricane.

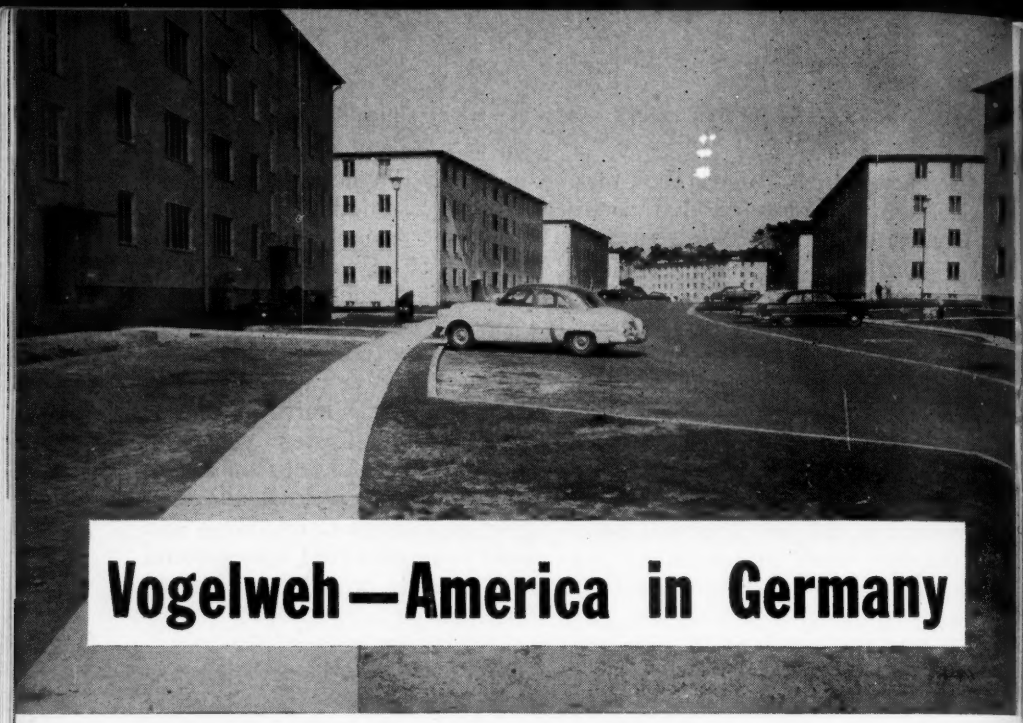
Already the Corps and the U. S. Weather Bureau are cooperating in appraising future capabilities and intentions of the hurricane-enemy for the entire Eastern seaboard. The surprise attacks of Connie and Diane, following so closely the damaging assaults of Carol, Edna and Hazel in autumn 1954, may portend an increase in probability of hurricane damage in this sector.

Any estimate of hurricane potential must be based, however, on further study of development, paths and frequencies of hurricanes. A more intensive and adequate system of hurricane warnings and flood forecasting will provide information the Corps needs for designing protective works.

The destruction wrought by Hurricanes Connie and Diane last August may well serve to give the American public some partial idea of the extent of damage a nuclear attack would inflict. The prompt, large-scale, effective relief rendered by the Corps of Engineers in conjunction with Federal, State and private agencies served to demonstrate their capability of coping with any similar rehabilitation mission, in war or peace.

AUTHOR'S NOTE

This article deals primarily with the contribution of the Corps of Engineers member of the Army Team in the rehabilitation task following Hurricanes Connie and Diane in August 1955. It does not include activities of the Federal Civil Defense Administration, American National Red Cross, Departments of Commerce, Agriculture, or Health, Education and Welfare; other Executive agencies such as General Services Administration, Housing and Home Finance Agency and Small Business Administration; or of State Governors, local governments, industries, civic groups, and countless private citizens. Nor can this account do more than salute the accomplishments of the Deputy Chief of Staff for Logistics and the Assistant Chief of Staff G–3 Operations, Continental Army Command, First, Second and Third Armies, the Quartermaster, Signal, Transportation and Medical Corps, the National Guard, and many others.



Vogelweh—America in Germany

THE WELL-STOCKED supermarket, the back-home fraternal groups, modern schools and teen-age football teams make Vogelweh just like any other modern American community—except that the community is not in America.

Vogelweh—the German name for the largest American community outside of the United States and its possessions—is located on the outskirts of Kaiserslautern, Germany, an hour's drive from the famous Black Forest. It houses 10,000 Americans, mostly U. S. Army members and their families, in 122 apartment buildings.

The $30,000,000 housing project, built with German occupation funds by the U. S. Army, includes chapels, schools, clubs and the Army's largest commissary in Europe.

Although this reflection of Main Street, U.S.A., is surrounded by an entirely different culture, Americans there have only one reason to suspect they are not living in the United States—few families have television.

In the huge supermarket patronized by more than 3,000 families, one can buy Stateside, brand-name products, fresh meat, pasteurized milk, baby foods, household equipment and anything else required by a typical American family for its daily sustenance and housekeeping.

The latest American movies are shown at conveniently located theaters, and popular American radio programs are heard regularly over the Armed Forces broadcasting network.

WHILE husbands perform their military duties during the day, and children go to elementary and high schools staffed by American teachers, their wives keep busy in one or several of the community's social, welfare and club projects. Several clubs are expressly organized to promote better relations between Americans and Germans.

Unofficial "mayor" of Vogelweh

is the Kaiserslautern sub-area commander of the USAREUR, Western Area Command, within which Vogelweh is located. He is responsible for Vogelweh's development and law enforcement.

A modified city council-type organization has been set up, staffed by officers having equivalent military functions. Problems involving crime, for example, are handled by the Provost Marshal, while those involving domestic matters receive attention by the Chaplain. The council meets regularly to discuss and settle any community problems which may arise.

Increasingly, American residents of Vogelweh are discovering that, even while maintaining their Stateside standards, they have an unparalleled opportunity to contribute to improved relations with the European community on an individual or an organized basis.

Sons and daughters of American service personnel discuss the day's doings at Kaiserslautern High School.

Shopping at the Army commissary, servicemen's wives find all the familiar trade-name products they are accustomed to using Stateside.

At the A&GM School, combat telephone lines hurdle terrain obstacles, introducing an improved technique for delivering

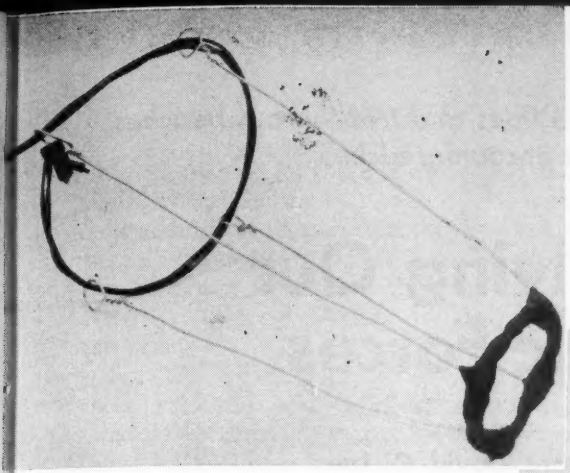
Wire by Fire

THE SITUATION calls for action—fast. Aggressor forces are jamming all radio channels. Communication from the Artillery to its forward observers and hard-pressed infantry units is an urgent necessity. But an intervening high bluff prevents rapid wire-laying by conventional means. What's the solution?

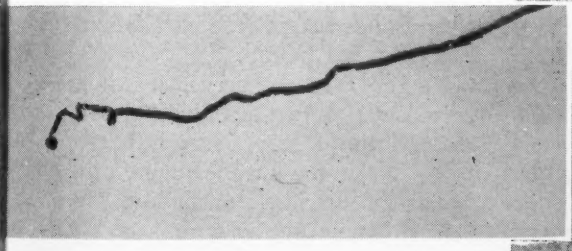
Adapting the technique used by sailors, whalers and the Coast Guard at sea, the Artillery and Guided Missile School at Fort Sill, Oklahoma, has come up with a field expedient—shoot it across! Instead of a harpoon gun, the Army's 3.5-inch rocket launcher coupled with a few dexterous twists of wire does the trick.

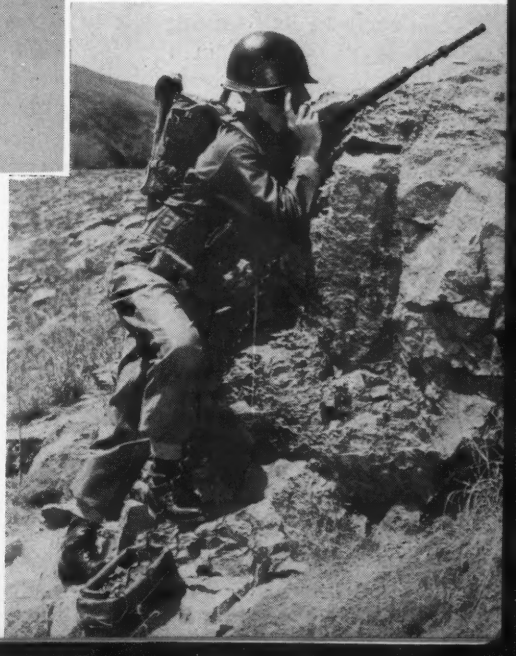
The following picture sequence shows how this expedient is employed by a wire laying team confronted by a formidable terrain obstacle.

A wire team chief and a crewman fashion a four-legged pickup bridle into which the rocket will slip as it leaves the gun muzzle.



ABOVE—*The pickup ring, shaped to fit tip of the rocket projectile, is heavily taped to cushion the shock; slip loop at the other end is the telephone wire itself, doubled for about 20 yards to prevent breakage.* RIGHT—*The four wire legs of the bridle are taped to the outer rim of the muzzle flash detector of the rocket launcher, leaving the slip loop clear. The emerging rocket engages the pickup ring.*





ABOVE—*This is how projectile carries the telephone wire. If a reel-type wire dispenser is not available the wire may be laid out on ground. Here harness and wire slow the projectile's flight but the line goes through.* RIGHT—*At the receiving end, a waiting trooper picks up the wire, hooks up an Army field telephone. With communications re-established, accurate Artillery fire support is again assured.*

Lashing seas, grinding ice floes and treacherous beaches are some of the hazards encountered in

Supplying Our Arctic Forces

Lieutenant David C. Lee

A SMALL landing craft moved slowly from the side of the looming cargo vessel and disappeared into the dense Arctic summer fog. The young operator, an Army corporal, peered intently over the ramp of his heavily laden craft as he guided it from the shelter of the small bay into the heavy ground swells of the open sea.

He nudged the wheel slightly and the bow swung sluggishly toward the shore line. Finally, eyes squinting, he spotted the rocky coast springing jagged from the angry breakers. Another nudge of the wheel, and the craft straightened on its five mile run to a pinpoint opening in the forbidding rocks where it would be beached.

The run, through thick fog within stone's throw of the irregular shore line, would be a dangerous one. The pull of the currents and tides and the terrifying push of the ground swells had become expected companions through hundreds of similar runs.

But it was stick to the shore line, or almost surely be lost in open Arctic seas. The shiny, efficient looking magnetic compass in front of the wheel would not be of much help. From where his craft pitched and tossed, the north magnetic pole was scant hundreds of miles, almost due west. Following the compass would take him nowhere fast.

He relaxed slightly and began the interminable watch of slowly moving rocks and breakers, waiting for sight of the narrow opening where heavy tractor trailers and powerful bulldozers would take his cargo of precious supplies and equipment up the steep rocky coast to an isolated Air Force installation, several miles inland.

To the casual observer it might seem strange to find a young soldier piloting a ship, carrying cargo to an Air Force base. But he and hundreds like him are playing key roles in the gigantic cordon of air defense that America has thrown around the northern approaches to United States industrial centers.

FROM Thule Air Base, famous outpost built by the Army Engineers in northern Greenland, to the southern tip of the island of Newfoundland lies a mighty semi-circle of American air power. Dozens of isolated warning stations stand quietly alert, sensitive radar ears

FIRST LIEUTENANT DAVID C. LEE, Transportation Corps, is on duty with Headquarters, 7278th GU Transportation Terminal Command.

attuned, waiting for the first sign of danger from the air.

Squadrons of fighters and bombers wait for any threat to the American continent to unleash the protective might of American air power.

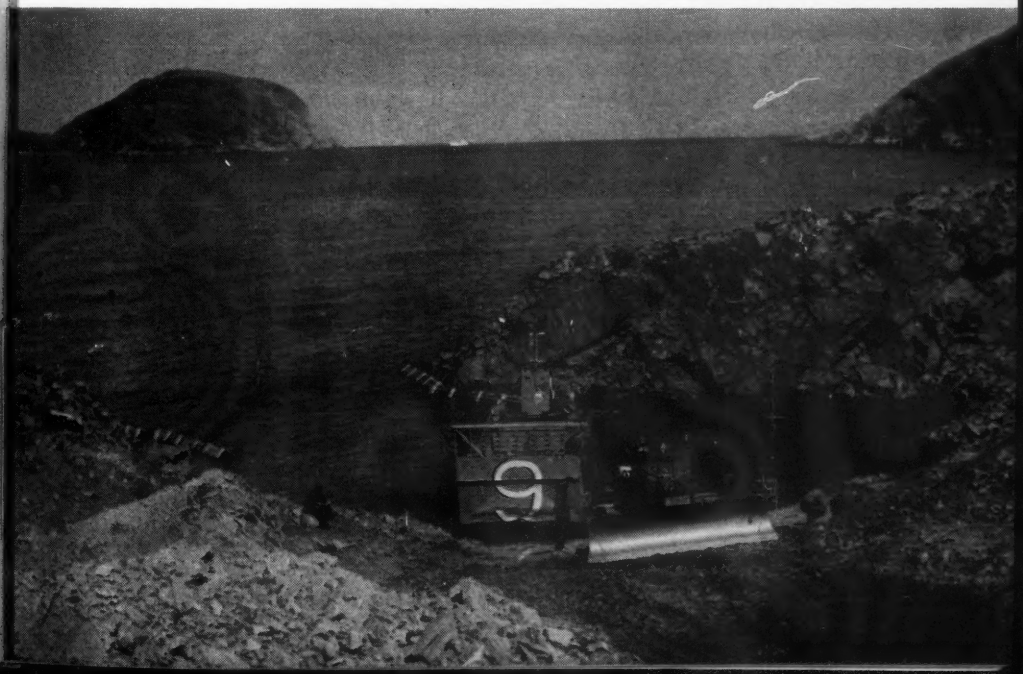
But the giant engineer equipment to build and maintain air strips is not brought in by B–50's. Supersonic jet fighters do not carry the hundreds of tons of rations to feed the men of our Arctic air bases. The job of supporting air power in the Far North belongs to yet another member of our defense team—the 7278th GU Transportation Terminal Command—a vital unit in our Arctic Army.

From the nerve center of Army Transportation at McAndrew Air Force Base, Newfoundland, 7278th headquarters controls cargo discharge operations at half a dozen major Air Force installations through an area of three million five hundred thousand square miles. At these installations the 7278th operates normal port facilities. Military Sea Transport Service vessels tie up at more or less adequate piers or anchorage areas for discharge with ships' gear and heavy cranes.

At Thule Air Base cargo flows smoothly over a 1000 foot DeLong pier, itself a testimony to Transportation and Engineer ingenuity. Sections of the pier were floated and towed to Thule by sea-going tugboats. The pier was assembled on the spot by the Corps of Engineers and raised to operating position with air jacks.

At Sondrestrom Air Base, halfway down the coast of Greenland, at the end of the world's longest fjord, the 7278th detachment is less

An LCM brings ashore a bulldozer that will grade and level the beach areas for the stream of cargo to follow.



Beached by the outgoing 37-foot tide, a Navy LST discharges preloaded vehicles onto the mud-flats. They have another mile to travel to reach dry ground.

fortunate. Here a small quay, in shallow water, receives cargo from barges that are moved through a narrow channel from shipside far out in the fjord.

But whether at Thule, Sondrestrom, Narsarssuak Air Base in Southern Greenland, or at Goose Bay base in Labrador, the discharge of support cargo is always a race with the clock.

EARLY in the season, during June, ice breakers knife through the still-frozen Arctic waters to bring in the first ships. No sooner does the ice completely disappear than the race with the coming winter begins. Five months to go at Goose Bay. At Thule no more than three —a short time in which to bring in water-borne cargo to support a full year's operations.

There is a frenzy of activity in the port areas. Harborcraft skippers bring in the big Victory ships, watching the water for the tell-tale traces of the first ice formation that will mark the beginning of the operation's end for another season.

Often the race is a photo-finish. At Goose Bay, late in the season, harbor craft are forced to churn back and forth through the harbor day and night, slowing up the formation of the ice that threatens to imprison the last of the cargo ships at their berths.

But these fixed port installations are only the beginning of Arctic Transportation's problems. Along the Eastern coast of Canada the only approaches from the ocean to isolated bases are over rocky beaches rising at forty-five degree angles from the sea, or over thousands of yards of tidal mud flats. To combat these obstacles Operation Pinetree was born in 1952.

EACH year, early in the spring, Transportation troops are brought from east coast ports of embarkation to discharge cargo in places that have, until now, been no more than hazy names in books of famous explorers.

Of necessity the Pinetree teams do not depend on equipment at the sites where they will discharge cargo. They are completely mobile, self contained units, operating over hundreds of miles of coastline from Navy LSDs (Landing Ship Dock). In the well decks of these Navy ships are carried landing craft and amphibious trucks, set to move quickly into the sea as the vessel is ballasted down. On the superdeck of the LSD stand the tractor

trailers, cranes, and caterpillar tractors that will clear the beach areas, then move the cargo overland from the beach sites to the inland air installations.

The LSD, with its men and equipment, rendezvous with a cargo vessel near the area to be served. Both vessels move to a location of relatively quiet water and the operation begins.

The big LSD is ballasted down and the landing craft emerge from the well deck into the sea. On their first trip they carry the cranes, trucks and tractors.

IF THE team is lucky the beach may be clear and the stream of cargo from ship to shore may begin immediately. But luck is scarce in the Arctic, and more often than not hours and even days must be spent clearing and preparing the beach for landing craft.

The strong Arctic tides carry rocks of all sizes and descriptions in their rush from the sea, to leave the beach strewn with obstacles. A beach cleared only weeks before may have become so littered as to require a full day in clearing jagged boulders.

The same tides and currents may bring ice floes to choke any possible entrance. Then a narrow path to the beach must be forced by a craft carrying a bulldozer. If the craft is successful in reaching the beach the bulldozer is discharged to push cakes of ice into deep water. Then the landing craft can tow them slowly and methodically back into the open sea.

Where the beaches are not rocky or ice-choked the problem is merely changed. Then the gentle gradients of beach area are clogged with hundreds of yards of spongy Arctic mud. The trucks creep slowly along the beach line, bringing load after load of rocky fill to be absorbed by the sticky mass.

At one point where the spring tide rises and falls 37 feet, the water creeps over two miles of mud flats. Landing craft brought in at high water settle to the mud as the tide recedes. They are unloaded and refloated with the next incoming tide.

EVER present is the danger of rocks and boulders strewn over the beaches—obstacles that lie hidden under high water but emerge jagged and threatening as the tide lowers. One slight error of judgment by craft operators or amphibious truck drivers, a miscalculation of scant feet outside the path that has been laboriously cleared, and the outgoing tide drops the craft on the sharp stone edges that twist and tear their thin steel skins.

From June until October the Pinetree teams range up and down the coasts of Labrador and Baffinland, clearing and reclearing the beach entrances, battling through heavy seas and treacherous summer ice floes to bring in vital defense cargo over steep rocky inclines and through seas of mud.

Since 1951 they have been the unsung heroes of a vital team—a solid, hard charging line for the flashy halfbacks of Arctic airpower. Working steadily against time and the Arctic they have added a proud new saga to the traditions of the United States Army—traditions of the seas and ice of the Far North, its forbidding lands and its treacherous climate—the traditions of our Arctic Army.

Army Extension Courses bring instruction to Regulars and Reservists seeking

CAREER ADVANCEMENT

Phillip M. Thienel

A PUZZLED sergeant recently was heard quizzing a corporal at the Quartermaster School, Fort Lee, Virginia. The corporal, who had come to pick up some Army Extension Course material, had given a Texas address on his records. Wasn't he a little far from his home base, the sergeant queried?

Quickly the corporal explained that a board of officers had just informed him that he must finish some extension course studies before he could be recommended for a commission in the Army Reserve. So he had flown to Richmond, then taken a taxicab the thirty miles to Fort Lee. He procured his material, reversed his route and when last heard from had passed his examinations successfully.

While this may be a somewhat extreme case, it does point up the importance of the Army Extension Course Program (AECP). Not so well known or publicized as the United States Armed Forces Institute—which provides correspondence courses and educational services for members of the Army, Navy, Marine Corps and Air Force —AECP is actually an older part of the Army's educational system, closely related to the Army's overall mission because it encourages strictly military education on off-duty time. It is perhaps best known as the "Ten Series" program because of the numbering system applied.

Dating back to a modest start in 1910, AECP is based on the premise that while neither time nor funds allow sending all Regular and Reserve personnel to resident schools, appropriate educational facilities can still be made available by mail. Thus, the program helps fulfill the Army's continuing need for trained men and women.

Currently more than 106,000 persons in the Active Army, Army Reserve, and National Guard are enrolled. In addition, there are some 9,000 civilian employees of the Department of Defense, 3,000 members of the Air Force, and 400 members of the Navy and Marine Corps, bringing the total (as of 30 June 1955) to 118,891.

THERE ARE now available more than 825 AECP subcourses published by 21 arm and technical service schools of all types. Appropriate subcourses are open to officers and enlisted members of the Active Army, Reserve, and National

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Guard, to qualified Department of Defense civilian employees, and to members of the other services. AECP lessons, textbooks, training aids and franked envelopes to return completed lessons, all are furnished free to the students.

Each combat arm and technical service school prepares its subcourses. These are sent to the Commanding General, Continental Army Command for review and final approval. Scopes and outlines for new or extensively revised subcourses also must have CONARC approval. The arms and technical service schools administer their own extension course programs. Staff and faculty prepare and revise the subcourses, enroll the students, grade and comment on the lessons submitted, maintain records, and issue a certificate when the student completes a series.

In this way students have direct access to each arm and technical service school. A close relationship is maintained with school instructors so that enrollees feel that they truly belong to the school of their particular arm or technical service.

COURSES are published in numbered series. The 10 Series is for basic precommission instruction of enlisted men. (Previous to World War II the 10 Series was primarily for Second Lieutenants.) This covers instruction to qualify for appointment in the grade of Second Lieutenant.

The 20 Series parallels instruction for Second Lieutenants; 30 Series, First Lieutenants; 40 Series, Captains; 50 Series, Majors; and the 60 Series, Lieutenant Colonels. Lessons cover matters applicable to the mobilization duties of the respective grades, and to qualify the individual for the next higher grade.

After completing the 50 Series in an appropriate arm or technical service school, officers may enroll for the 60 Series conducted by the Command and General Staff College, Fort Leavenworth, Kansas. Special high-level subcourses are available at the college for colonels and general officers, and for graduates of the 60 Series.

Enlisted men enrolled in the Army 10 Series receive their instruction from The Infantry School, Fort Benning, Georgia, except that enlisted men in The Adjutant General's Corps, Chemical Corps, Corps of Engineers, Medical Corps, Military Police Corps, and Signal Corps enroll in the 10 Series of their own arm or technical service school. Women's Army Corps personnel also are authorized to enroll in The Adjutant General's School.

Under direction of CONARC, some schools prepare common subcourses which are used by others in their own particular extension course programs. For example The Adjutant General's School prepares "Organization of the Armed Forces of the United States;" The Engineer School, "Map and Aerial Photograph Reading;" Judge Advocate General, "Military Law and Court-Martial;" and The Quartermaster School, "Mess Management." With CONARC approval, a school may also use other than common subcourses from the curricula of other schools.

In all, about fifty common subcourses are offered under the program. A new one—"Military History of the United States"—is now under preparation by The Adjutant General's School.

EACH numbered series of each school is subdivided into a group of numbered subcourses. These are arranged so that instruction follows a progressive order. The subjects taught by the various schools are of course related to the mission of the arm or technical service they represent and closely parallel the content of the courses taught in resident instruction.

In addition to the numbered courses, the Army endeavors to broaden the scope of the extension program and make as many resident courses available as possible by the correspondence method. This is done by preparing special courses, and courses equivalent to associate company officer and associate advanced officer resident instruction.

Twelve schools now publish such Special Series. For example The Armored School issues "Armored Cavalry Regiment;" Artillery and Guided Missile School, "Field Artillery and Antiaircraft Artillery Gunnery and Unit Commander;" Judge Advocate General School, "Military Law for Commanding Officers" and "Legal Administrative Assistant and Legal Clerk;" and Medical Field Service School, "Hospital Administration."

The Command and General Staff College offers a preparatory course to aid students scheduled for attendance there. The Ordnance School publishes a "Maintenance Course;" Provost Marshal General School, "Criminal Investigation;" Signal School, "Radar and Television;" and Transportation School offers "Installation Transportation Officer."

ORDNANCE and Transportation Schools now have a program whereby officers can complete certain courses in the 20–30–40 Series and receive a certificate for the associate company officer course. Completion of certain courses in the 30–40–50 Series leads to a certificate for the associate advanced officer course.

The Judge Advocate General also has an extension subcourse that parallels the resident JAG officer resident course. This type of instruction is expected to be adopted in the other arm and technical service schools.

The Command and General Staff College also offers forty-one subcourses that are comparable in scope to the resident associate course of the College. All these courses are listed in DA Pamphlet 20–100, 11 July 1955.

COURSES as now taught have undergone considerable change through the years. The first Army correspondence course was authorized in 1910 in an effort to increase the training of Medical Department officers. An Army Field Service and Correspondence School was established as a department of the Army Field Service School at Fort Leavenworth, Kansas, to administer the program.

Enrollment initially was limited to Regular Army medical officers, but by 1915 The Surgeon General recommended participation by Reserve and National Guard as well. The response was enthusiastic, and at the end of the first year 504 reserve medical officers had completed the course. The plan was discontinued, however, with the advent of World War I.

Following that war, the Army

adopted correspondence courses in all of its service schools. In 1922—the year in which such courses first became available—6091 students enrolled. By the time World War II broke out and the program was again suspended, there were some 96,000 students under the program. Considering the size of the Army then, the figures are impressive.

WITH resumption of the extension program following World War II, the scope of courses was broadened. Subjects now include such military innovations as psychological warfare, guided missiles, atomic energy, biological and radiological warfare, recoilless weapons, electronics, television, radar.

Subcourses are constantly revised to keep them up to date with new developments and doctrine.

By thus enabling its members to improve their proficiency in off-duty time, the Army builds its pool of trained men. The reservoir of knowledge thus being built up strengthens the Army potential for accomplishment of its ultimate mission—success in combat.

Your Date with History

A Calendar of Army Anniversaries

1 Jan 1776...First American Flag bearing seven red and six white stripes raised at Cambridge, Mass.

6 Jan 1776...Battery D, 5th Field Artillery Battalion constituted as Alexander Hamilton's Provincial Company of Artillery of the Colony of New York, the oldest unit of the Regular Army.

8 Jan 1815...Battle of New Orleans, fought after Treaty of Ghent signed.

9 Jan 1945...Landing in Lingayen Gulf (Luzon, Philippine Islands).

13 Jan 1948...Army War College post, District of Columbia, renamed Fort Lesley J. McNair.

19 Jan 1807...Birthday of General Robert E. Lee, at Stratford, Va.

21 Jan 1903...Congress passes legislation furnishing the National Guard with both State and Federal support.

22 Jan 1944...Landing at Anzio, Italy.

24 Jan 1923...American flag lowered from Fortress Ehrenbreitstein at Coblentz, ending U. S. occupation of Germany after World War I.

25 Jan 1907...Coast Artillery Corps established.

26 Jan 1918...Tank Corps of U.S. Army created.

28 Jan 1909...United States troops formally withdrawn from Cuba.

31 Jan 1944...Landing on Kwajalein in the Marshall Islands.

2 Feb 1901...Army Nurse Corps authorized.

5 Feb 1844...Lt. J. C. Fremont's Army expedition started across Sierras.

6 Feb 1802...War declared on Tripoli.

14 Feb 1903...Congress passed legislation establishing Army General Staff.

19 Feb 1945...Landing on Iwo Jima.

20 Feb 1943...Battle of Kasserine Pass (Tunisia) began.

22 Feb 1732...Birth of George Washington.

23 Feb 1836...Mexican forces began siege of the Alamo (Texas).

26 Feb 1943...Allied troops retake Kasserine Pass in Tunisia.

Signal Corps Origins—

From Wigwag to

AT FIRST glance, the crossed flags of the Signal Corps insignia resemble the two small flags employed to spell out letters rapidly in the semaphore system, as used today. But they are not semaphore flags. They are wigwag flags which go back to the Civil War, when the first Signal Corps men used a single large flag, waving it to the left or right or alternately, according to a code, to signal the messages.

American forces were the first in the history of the world's armies to appoint a signal officer. He was Albert J. Myer, an Army surgeon whose interest in the deaf had led him to study sign language. The War Department took interest in a system of visual signaling which he had devised, using flags by day, torches by night.

Appointed in the spring of 1860 "Signal Officer with the rank of major to fill an original vacancy," Major Myer set out for the Navaho campaigns in the Southwest, carrying with him his paraphernalia.

His basic equipment consisted of flag and torch kits. The flags were several. For use against a dark background, he employed a white flag with a red square, against a light background, a red flag with a white square. Rolled up in the kit were several sizes of flags, up to six feet square, and sectional staffs.

The roll included the torches, usually two in number. These were copper cylinders to hold turpentine fuel and fitted with wicks. The signalman clamped one torch onto a staff for waving with the same motions as the flag in the wigwag code. The second torch he laid on the ground at his feet to provide a reference point for the right and left motions of the "flying" torch.

Extra wicks, a pair of scissors to trim them, and matches completed Major Myer's kit. A canteen of turpentine and a powerful telescope, used to read visual signals at long distances, were also carried.

THE American Civil War has been called the first modern war because in it appeared the beginnings of so many innovations which have completely revolutionized warfare within less than a century. Telegraph, since its first effective demonstration in 1844, had extended its wire lines along the railroads of the Nation. Now, as war descended upon the country, Major Myer saw opportunities for its use in combat.

Flags and torches were good only when visibility permitted them to be seen. Besides, the enemy might see them and figure out the code too. Telegraph could overcome these defects of visual signals. Al-

GEORGE R. THOMPSON, Ph.D., is Historian, U. S. Army Signal Corps.

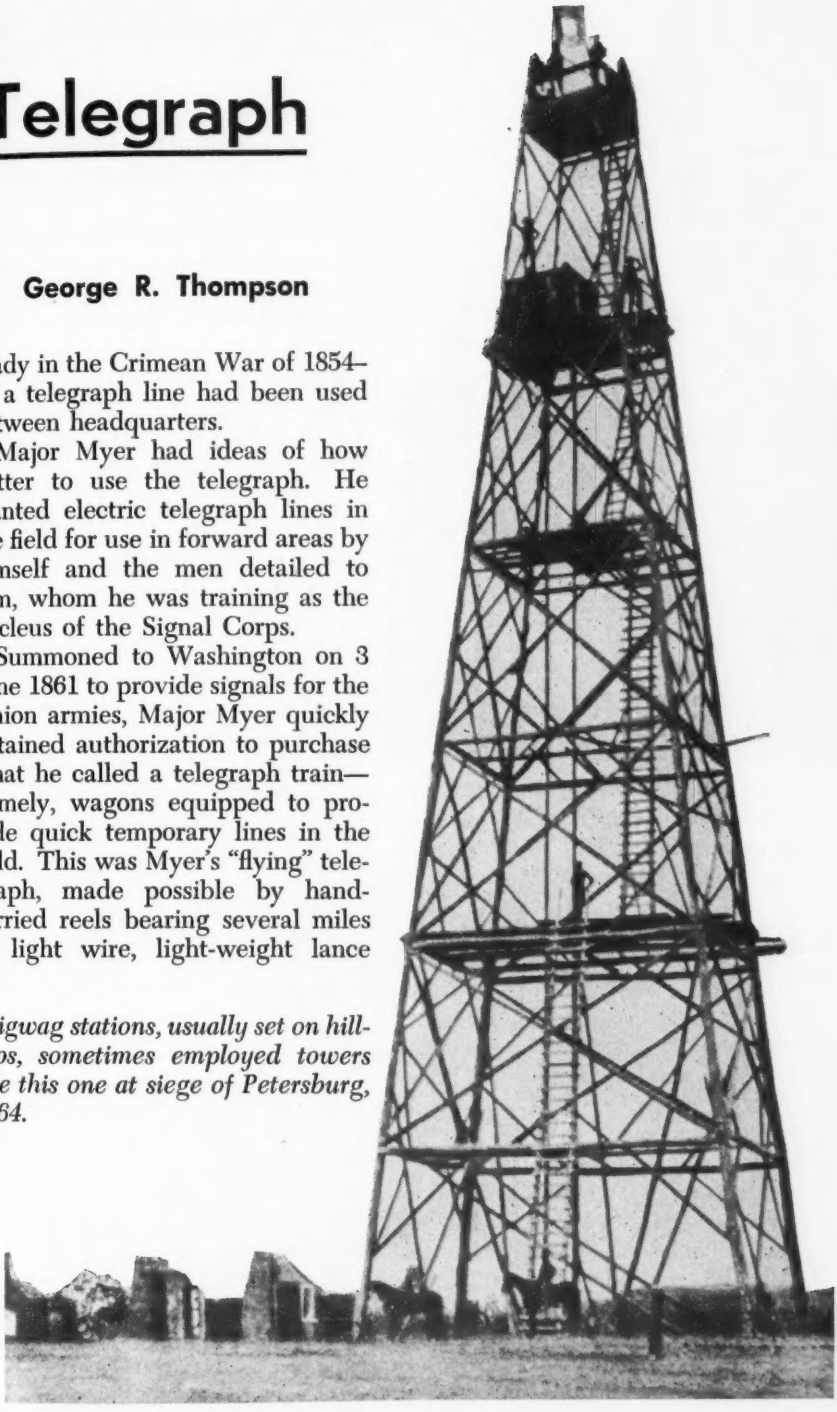
Wigwag to Telegraph

George R. Thompson

ready in the Crimean War of 1854–56 a telegraph line had been used between headquarters.

Major Myer had ideas of how better to use the telegraph. He wanted electric telegraph lines in the field for use in forward areas by himself and the men detailed to him, whom he was training as the nucleus of the Signal Corps.

Summoned to Washington on 3 June 1861 to provide signals for the Union armies, Major Myer quickly obtained authorization to purchase what he called a telegraph train—namely, wagons equipped to provide quick temporary lines in the field. This was Myer's "flying" telegraph, made possible by hand-carried reels bearing several miles of light wire, light-weight lance



Wigwag stations, usually set on hilltops, sometimes employed towers like this one at siege of Petersburg, 1864.

The central Washington signal station of the Civil War was located atop a building still standing near the White House.

poles (iron shod and fitted with insulators), telegraph sets and tool kits.

Disadvantages of the commercial type of telegraph of that day were twofold—it required heavy storage batteries with their easily spilled acid electrolyte, and skilled Morse code operators. Myer wanted a telegraph system unencumbered by the weight and complicated maintenance of storage batteries. And he wanted a system simple enough so that relatively unskilled soldiers could communicate with it.

EARLY in 1862 Myer believed he had found what he wanted. It was the Beardslee magneto-electric telegraph instrument. He ordered the construction of about sixty sets, the first electrical signaling device designed and produced solely for military use.

The device was developed by George W. Beardslee of New York specifically as a portable telegraph for the Army. Operating without batteries, the instrument employed magnetos which generated current when hand-turned, like the ringers on Army field telephones or on old-fashioned phone boxes.

Myer himself described the device as follows: "its working current . . . when placed on a telegraph line is generated by a pile of magnets, a part of the instrument itself. The letters of the alphabet are plainly marked on the dial. To cause the letters to be indicated at either end of the line, or to read them, are operations so simple as to be within the power with little practice, of almost any soldier who can easily read or write."

THE NEW flying telegraph, operated by the Signal Corps to provide tactical communications, accompanied the Union Army during the Peninsular Campaign in 1862. Beginning on 24 May the Beardslee instruments in their first field test provided message service for General McClellan's headquarters. For three weeks they sent and received many dispatches over several miles of wire insulated with gutta-percha. On one occasion Lieutenant Milton Benner, commanding the telegraph train, sent 18 messages of about 40 words each in less than two hours.

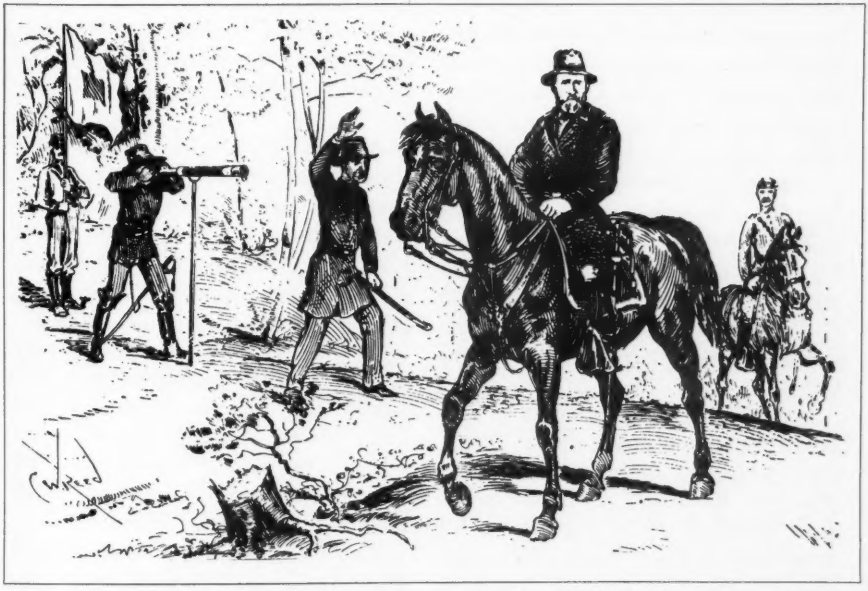
Myer believed his portable mag-

neto field telegraph had proved practicable. He reported on 5 July 1862: "I am satisfied with my trials of the instruments. . . . Occasions must often occur with an active army when none but portable telegraph trains can be used."

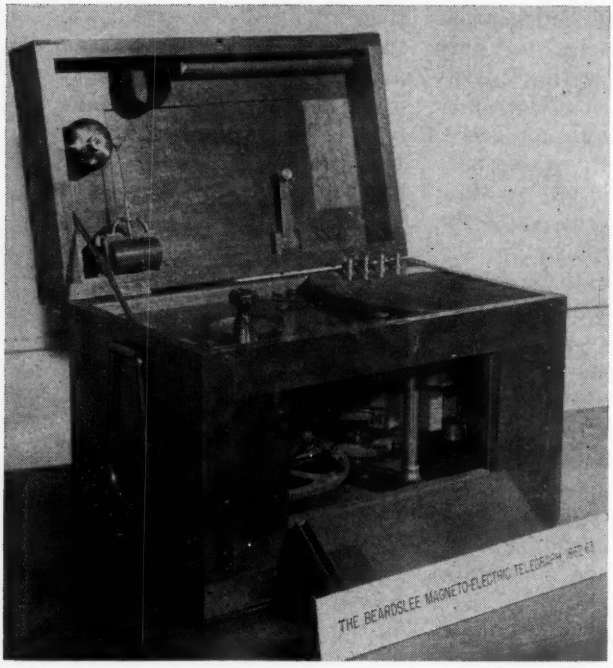
Such occasions occurred in the Fredericksburg campaign in December 1862. Here three Signal Corps telegraph trains equipped with the Beardslee sets accompanied the Union Army. Myer had set up five visual wigwag stations along the north bank of the Rappahannock, but fog interfered with their operation. Smoke from the burning town engulfed a wigwag station which had been set up in the Fredericksburg courthouse steeple on 12 December.

But fog and smoke were no obstacles to the flying telegraph. Wires were run from General Burnside's headquarters north of the river to the Federal left wing on the river, and beyond. Three men and an officer under Myer's command with 25 lance poles and a reel of wire had extended the line into Fredericksburg under cover of darkness in the early hours of 11 December. During the battle, messages were promptly sent to Burnside's headquarters. Myer characterized the performance of his field wire telegraph as "superb."

IN THE campaigning in early 1863 around Chancellorsville, however, the flying telegraph trains and the Beardslee device proved less successful. Curious soldiers cut the insulated wire. The insulation itself deteriorated after months of usage. Above all, the Beardslee instrument was a short-range signaling device, unable to generate enough electricity to signal through more than a few miles of wire. Its



This sketch depicts a Civil War incident at Shiloh when General U. S. Grant was ordered out of line-of-sight by a lieutenant.



About 60 sets of the Beardslee Magneto-Electric Telegraph were in field use by late 1863.

range was easily surpassed by commercial type telegraph which the semimilitary civilian telegraph organization, directed by the Secretary of War himself, was extending increasingly to the Union armies.

On one occasion at Chancellorsville, finding the service too slow on a ten-mile line laid and operated by the Signal Corps, General Hooker turned the operation over to the civilian telegraphers who connected their storage batteries and worked the line more effectively with their Morse keys and sounders.

Signals at Chancellorsville suffered in other ways, too. Myer, now a colonel, complained that he was not informed of battle plans and therefore could not deploy his men and set up stations effectively. Besides, the Confederates had figured out the cipher system the Signal Corps used, so that the Northern commanders hesitated to employ visual wigwag. This defect was overcome when the Union Army adopted an improved cryptographic system employing the cipher disc which Myer invented.

AT GETTYSBURG in July 1863 the tables turned. General Meade asked the Signal Corps to participate in his war councils and battle plans. As a result visual communications were much used in the campaign—atop the Lutheran Seminary in the town and along Cemetery Ridge, and in particular at Little Round Top. A signal station had been set up there when suddenly in the afternoon of 2 July the rocky hill became an objective of both armies.

The mere presence of the signal flags on the hill delayed the Confederate advance long enough to affect the battle decidedly. Flags

meant the presence of observers reconnoitering the scene with their telescopes. The Confederate General E. P. Alexander later wrote, "That wretched little signal station upon Round Top that day caused one of our divisions to lose over two hours and probably delayed our assault nearly that long." He had been directed, in moving up his artillery, to keep out of sight of the Signal Corps men on the hilltop.

BALLOONS, forerunners of military use of air space, were assigned to the Signal Corps in 1861, only to be abandoned later and not revived till the Spanish-American War. Moored balloons, equipped with wigwag and even wire telegraph, were used as observer stations. General Alexander remarked that, like the signal station on Little Round Top, they had great value "for the annoyance and delays they caused us in trying to keep our movements out of their sight."

A dramatic instance of Civil War signaling occurred while Sherman was at Atlanta, on his march to the sea in 1864. Some miles northwest was the military depot of Allatoona, packed with great stores necessary for Sherman's advance. The Confederates sought to capture the depot and cut Sherman's life line. As a Confederate Corps slashed in from the flank toward Allatoona, which was lightly held by a Federal Brigade, Sherman's wire contact along the railroad was severed. Visual signals alone remained.

From Vining's station on Atlanta's outskirts Signal Corps men wigwagged a message which was relayed via a station on Kenesaw Mountain and received in Allatoona 18 miles away. The message asked that General Corse and his troops at Rome, some miles west of Allatoona, rush to the depot's defense.

The civilian telegraph along the railroad to Kingston, half way to Rome, remained intact and the message was relayed to Kingston by that means. But beyond, the wires had been cut. A locomotive served to transport the message to Rome, and to General Corse.

Hurrying to Allatoona, he arrived barely in time to stave off a desperate and bloody attack. General Sherman, on pins and needles in Atlanta, presently received wigwagged assurances from Allatoona that the depot was saved. One of the messages was General Corse's personal message: "I am short a cheekbone and one ear but am able to beat all hell yet."

Thus the crossed flag and torch insignia appropriately symbolize the origin of the Signal Corps. That origin received the deep imprint of the foresight and innovating spirit of the Corps' founder who grasped, among much else, the significance of electrical signaling. Especially notable in Myer's fight to provide tactical field telegraph was his procurement of the Beardslee telegraph set, the first electric communications device designed and built for Army use, incorporating characteristics which are as much demanded today as then—namely, ruggedness, portability and simplicity of operation.

From its birth in that first of modern wars nearly a century ago the Signal Corps continues its tradition, through increasingly technical eras, of pioneering new developments in military signaling.

Supplying Purified Water

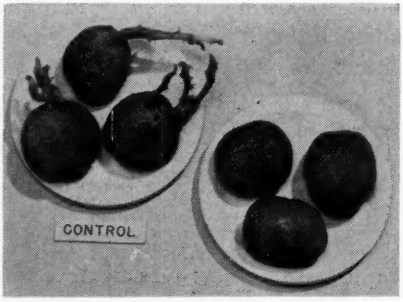
NOW NEARING standardization by the Corps of Engineers, a truck-mounted water purification unit received an emergency test under field conditions when it was rushed into action recently in flood-stricken areas of Pennsylvania. The unit can purify 3,000 gallons of water an hour, 24 hours a day.

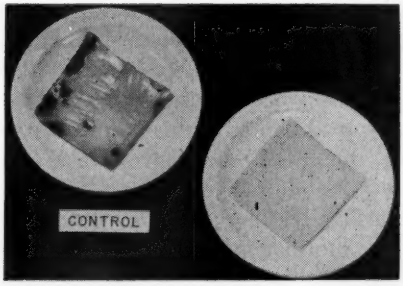
Heart of the purifier is an "erdlator", an all-metal solids contact clarifier which chemically coagulates and removes mud, bacteria and other suspended matter and makes effective disinfection possible. The "erdlator," an up-flow coagulation basin, is connected in series with diatomite filters. This combination removes suspended matter and bacteria, and provides physical barriers to the passage of organisms which cause dysentery and schistomiasis, a serious water-borne disease found in the Far East.

After being chemically and physically treated, polluted water emerges as purified drinking water in approximately 20 minutes. Pulverized limestone is used as the coagulant aid in the clarifier. Calcium hypochlorite added during treatment assures complete purification.

Preserving Food by Irradiation

ATOMIC radiation may, before too long, replace present methods of heat or refrigeration in the preservation of foods if a five-year program to study all aspects of the subject is successful. The program is being conducted by the Army Quartermaster Corps in cooperation with the other services, the Atomic Energy Commission, the Department of Agriculture, the National Research Council and numerous educational, scientific, industrial agencies.





In experiments on potatoes, irradiation has been found to inhibit sprouting. Potatoes that normally sprouted in storage within six months after harvesting were irradiated two months after being taken from the ground—with the results shown in the accompanying photograph. An irradiated slice of cheese, kept at room temperature for three months in airtight plastic wrapping, contrasts with an un-treated slice of cheese kept under exactly the same conditions.

Partners in frontline defense, Ordnance-trained maintenance men have a clear cut mission—

Keeping the Guns Battle-Ready

G. J. Krieger

NO MATTER how well trained the crews who serve the guns may be, they are of no avail if the gun fails to function. And a weapon can function only as long as soldier technicians perform the maintenance and repair that will keep the guns battle-ready.

While that has always been true, today the task assumes new importance and is vastly more complicated. Maintenance and repair now includes not only the pieces themselves but the intricate detectors and aiming mechanisms which comprise an entire weapons system. Such systems are of vital importance to the effectiveness of complicated antiaircraft weapons.

Today's Ordnance repair and maintenance expert must be highly trained in shop work, construction, functioning, malfunction diagnosing and maintenance of the weapons that shoot. And while it would appear that only specialists with an extensive background in science and engineering could do the job effectively, the Army, through its Service School System, readily produces the technicians, highly trained and competent in their fields.

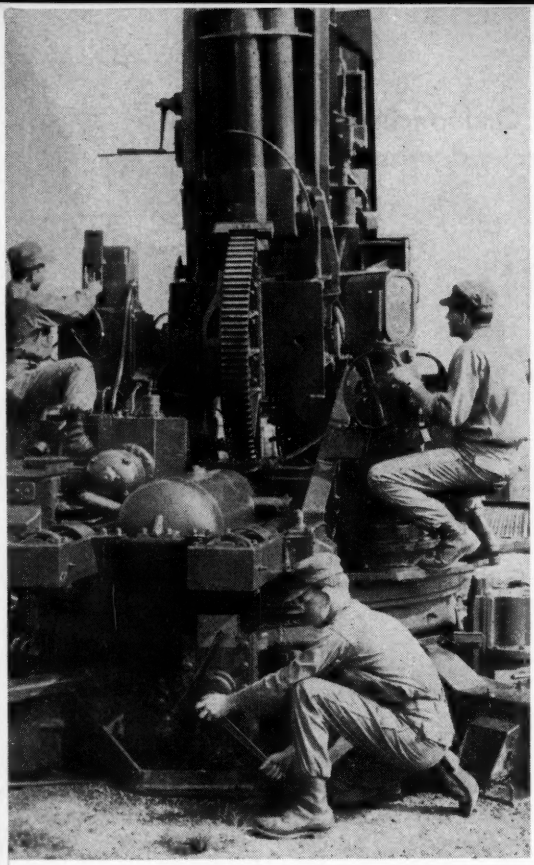
TO FURNISH essential mechanical and electronic repairs, the Ordnance Corps trains a variety of skilled technicians. Courses are given in both light and heavy categories of field and antiaircraft weapons at The Ordnance School, Aberdeen Proving Ground, Maryland.

Both the light and heavy artillery repair courses have been revised to conform with the new Military Occupational Specialty structure. The new Field Artillery Repair Course covers all field artillery weapons, while the Antiaircraft Artillery Repair Course deals with the antiaircraft weapons, all sizes.

In both courses, trainees are instructed in such subjects as mathematics and science; elementary shop; rigging; sources of information; operations under unusual conditions; and construction, functioning, malfunction diagnosing and maintenance of the particular weapons which they are studying.

As graduates of the initial courses gain in actual experience, they become eligible to qualify as maintenance and repair supervisors.

G. J. KREIGER was formerly First Lieutenant on the technical information staff of Headquarters, Ordnance Training Command, Aberdeen Proving Ground, Maryland.



Preventive maintenance is practiced on a 120-mm. antiaircraft gun by technicians undergoing training at Aberdeen Proving Ground.

Three main courses are offered in integrated fire control materiel. Under the new MOS structure, courses offered are: Fire Control Repair Helper at The Signal School, Fort Monmouth, New Jersey; and Light Fire Control Equipment Repair and Heavy Fire Control Equipment Repair at The Ordnance School. The "Light" course concerns the T–38 Antiaircraft Fire Control System, while the "Heavy" course concentrates on the M–33 system.

SOLDIERS graduated from the Fort Monmouth course are qualified repair helpers. The course is a prerequisite to the more specialized fire control courses in Integrated Fire Control Electronics Repair—either on the M–33 or the T–38 Antiaircraft Fire Control Systems.

Graduates are skilled technicians, and are assigned to units according to need. Formal classroom and laboratory training continues to be supplemented by on-the-job training programs or at the Ordnance Unit Training Center at Aberdeen Proving Ground.

The Center provides practical and realistic on-the-job training for newly activated detachments. These may be small, highly skilled repair groups or conventional company-size units. While they are of many different types, each is designed to perform field maintenance support of specific Ordnance equipment.

Once a detachment has been assigned to the Unit Training Center, it usually undergoes a week and a half of pre-unit training, followed by seven weeks of basic unit training and then six more of advanced unit training.

Each member of the detachment learns to integrate his own particular specialty with the work of the unit. In addition, sufficient cross-training is given so that in an emergency the technician may take over various other slots.

ORDNANCE units staffed by men trained in the various skills required to maintain AAA equipment are placed according to need in the field. Each infantry and airborne division normally has an Ordnance battalion consisting of two companies while the armored

division Ordnance battalion is composed of three identical companies, plus a headquarters company. Here light AAA fire control systems repairmen and light artillery repairmen are assigned.

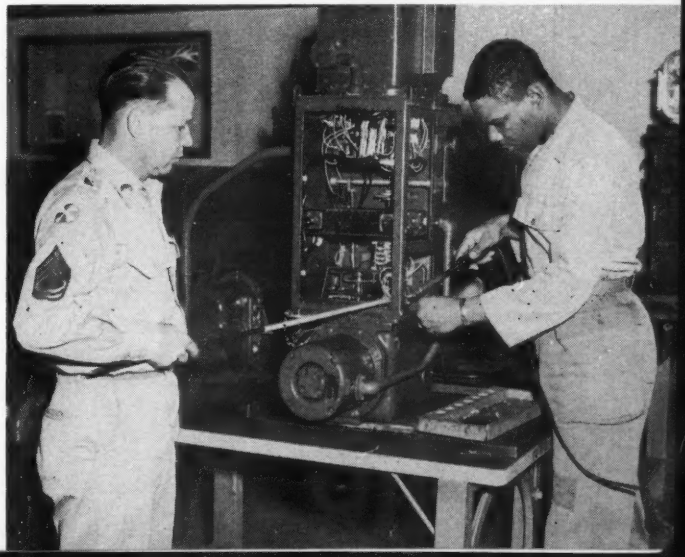
Normally Ordnance companies work in the Division rear and Corps service areas but are assigned to Army. Direct Support Ordnance companies give mobile support for nondivisional troops and reinforce division ordnance when required. Those men who have qualified as Field Artillery Repairmen, AAA Repairmen, AAA Remote Repairmen, and Light and Heavy Fire Control Equipment Repairmen are employed at this level.

Backing up the direct support companies at Corps level are Ordnance Heavy Maintenance Companies (TOE 9–9R) which furnish repairs too heavy for the direct support companies. There also are direct support companies in the Army Area to supply and maintain the Army AAA Brigade.

DEPOT maintenance is centered in the Communications Zone Area. Materiel that may be too badly damaged for either direct support or heavy maintenance units to handle is dispatched to the Ordnance Armament and Fire Control Rebuild Company of the Ordnance Armament Rebuild Battalion.

In addition there are several Ordnance detachments and teams which are organized for specific duties. These include the Artillery Repair Detachment with Field Artillery Repairmen; two integrated Fire Control Detachments, one for the M–33, the other for the T–38 Antiaircraft Fire Control System; and a Heavy Antiaircraft Artillery Repair Detachment which performs field maintenance on 75-mm., 90-mm. and 120-mm. pieces and mounts only.

TO PROVIDE essential services at every echelon, skilled Ordnance technicians are trained and organized as part of a team to insure that the guns keep firing. They have proved themselves to be the indispensable partners of the men who actually handle and fire the guns, including antiaircraft defending American cities, as well as field units and their weapons.



Under the watchful eye of an instructor, a student replaces terminal lugs on a power control M–3 of a 90-mm. gun.

WHAT'S NEW

IN TRAINING LITERATURE, AIDS AND EXTENSION COURSES

Keep your organization current with the latest training materials by referring to this section in each issue.

TRAINING LITERATURE

While the following new literature will be published shortly, units are cautioned NOT to requisition copies until receipt of automatic initial distribution or the items are listed in DA Pamphlet 310–3.

Quartermaster Service Company. A revision of FM 10–6, January 1946, brings the current edition up-to-date to provide information necessary for efficient operation of the company (TOE 10–67R).

Soldier's Manual for Defense Against CBR Attack. Changes Number 3 to FM 21–41, April 1953, will bring the manual up-to-date on the use of atropine and the toxic alarm system.

Transportation Service in Theaters of Operation. The new FM 55–03—a revision of FM 55–6, December 1945—disseminates basic Transportation Corps doctrine and describes organization and functions of Transportation staff sections and units in theaters of operation.

Military Biology and Biological Warfare Agents. This new Technical Manual provides an up-to-date source of information on various aspects of biology having military application.

Army Doctrinal Guidance. In a letter to all major commands, Department of the Army has announced adoption of a procedure designed to expedite the announcement of new and revised basic operational guidance. This will be accomplished by publication of a series of Army Doctrinal Guidance statements in the form of loose leaf portions of a new field manual—FM 100–1, *Doctrinal Guidance.* While only limited distribution of the new manual will be made to major commands, the end result will mean a more expeditious publication of training literature, since preparing agencies will be provided with approved basic operational concepts upon which to develop the implementing manuals.

TRAINING AIDS

Following are examples of recently distributed aids made available to Army units through training aids sub-centers and film and equipment exchanges.

Antiaircraft Artillery. Films of interest to AAA units:

TF 9–1934	Methods of Solution of AAA Fire Control Problems—Part I—Conversion between Spherical and Rectangular Coordinates.
TF 44–1964	NIKE I, SAM Battalion, Introduction to the System (C).
TF 44–2148	NIKE I, SAM Battalion, Launching Area —Part II—Preparation and Checks of Launcher-Loader.
TF 44–Series	NIKE I, SAM Battalion, Preparation of the Missile—Part I—Uncrating, Fire Installation and Pressure Tests (TF 44–2150) Part II—Missile Tests (TF 44–2151) Part III—JATO Uncrating and Joining to the Missile (TF 44–2152) Part IV—Fuel Servicing (TF 44–2153) Part VI—Warhead Installation (TF 44–2155) Part VII—Final Preparation (TF 44–2156) Part VIII—Routine Checks (TF 44–2157)

Land Mine Warfare. Seven new training films have been distributed:

TF 20–1980	Part II—Siting and Marking (11 minutes).

TF 20–1982 Part IV—Recording and Reporting (13 minutes).
TF 20–1983 Part V—Arming, Disarming, and Camouflage (24 minutes).
TF 20–1984 Part VI—Booby-trapping Mines (26 minutes).
TF 20–1986 Part VIII—Nuisance Mining (15 minutes).
TF 20–1988 Part X—Area Clearing (12 minutes).
TF 20–1989 Part XI—Behavior in a Minefield (10 minutes).

Escape. This new 45-minute training film (TF 21–1973) is designed to show the individual soldier the importance of and opportunities for escape. Actual case histories depict escape from front lines, division inclosures, trucks and trains, and PW camps.

Armies of the World. This new 33-minute film (MF 30–8443) is designed to brief all military personnel on Soviet European satellites.

Graphic Training Aids. Under a new program recently approved, film and equipment exchanges will distribute Department of the Army transparencies. Transparencies on the following subjects have been approved:

Automotive Subjects (22 transparencies).
Rocket, 762-mm, M1 (15 transparencies).
M33 Fire Control System (9 transparencies).
280-mm Gun (43 transparencies).

New Training Devices. Some of the devices which have been developed, tested, procured, and distributed to using units are:

NIKE Training Aids

Device 11–BC–1.

An inert XM5 Jato unit properly weighted, balanced, and equipped with all electrical circuitry. Designed for use in a handling, checkout and functioning of NIKE I Booster.

Device 11–BC–2.

An inert nose, mid and aft warheads, properly weighted and balanced together with inert arming mechanisms and detonating cord assembly. Designed for crew training in the warhead system.

Device 11–BC–3.

A drum filled with the proper quantity of carbon-tetrachloride dyed to simulate operational acid. It is designed for use in crew training in fueling and defueling NIKE—I and proper handling of oxidizer.

ARMY EXTENSION COURSES

The following new or revised Army Extension subcourses recently were approved for publication:

Atomic Defense Series–5. Chemical School. Command, staff, and training aspects of atomic defense.

Railroad Track Maintenance I. Transportation School. Glossary of terms; duties of personnel; safety regulations; maintenance of tools and equipment; construction details; demolition of track and switches.

Logistical Management, Rail Movement, Preventive Medicine, and Supply Economy. Infantry School. Command and staff responsibilities and functions in obtaining efficient logistical management in the infantry regiment in garrison to include personnel, procedures, forms, and records; principles and procedures used in rail movement by an infantry regiment; the preventive medicine program and its implementation; the importance and principles of supply economy and methods of achieving it in the infantry regiment.

Processing Supplies for Oversea Shipment. Quartermaster School. Oversea supply channels; requisition from oversea theater; routing of requisitions; port processing; depot action; port handling of shipments; organization and functions of ports of embarkation; procedure for equipping units preparing for movement overseas; automatic supply; semiautomatic supply and supply by requisition; block shipment; depot handling of oversea shipment; developing of Department of the Army theater projects.

PARAGRAPHS

from

The Pentagon and the Field

Organized at Fort Bragg, North Carolina, last August, an Army "Skycav" unit employing helicopters, fixed wing aircraft, jeeps and tanks was tested during Exercise Sage Brush, the recent Army-Air Force maneuver at Fort Polk, Louisiana.

Using Army jeep and airborne television, photographic, radio and radar equipment, the company-sized unit is designed to provide Army commanders with accurate information about an enemy. The "Skycav" test sought to reduce the time required by searching elements to gather information and to transmit it to headquarters.

Augmentation forces of the Army and Navy, as well as Air Force auxiliaries, will be included in Exercise Cracker Jack to be conducted this winter in Canada and the United States. Purpose of the exercise is to provide radar tracking and intercept practice for defense forces under winter weather conditions.

Redesignation of boards is announced in General Orders No. 60. The Army Board of Review now is to be known as the Army Board of Review for Demotions and Eliminations while the former Army Review Board has been redesignated the Army Security Review Board. At the same time the Review Board Council, an administrative agency within the Office of the Secretary of the Army, has been redesignated the Army Council of Review Boards.

Experimental honeycomb paperboard shock pads that safely cushion supplies dropped without parachutes from heights of 1,500 feet have been developed by the Army Quartermaster Corps. C Rations, 5-in-One Rations, and 5-gallon water and gasoline containers have been successfully dropped at velocities of up to 57 feet per second. The experimental shock pad which makes this possible is a layer, normally 3 inches, of honeycomb paperboard sandwiched between two ¼-inch sheets of cardboard. The number of shock pads required varies with the weight of the drop load.

A recent reorganization of Army domestic Ports of Embarkation brings such ports, their out-ports and subports under three separate Transportation Terminal Commands. The new commands will be responsible for all terminal operations and related activities along their entire respective coastlines.

The New York Port of Embarkation at Brooklyn now is the Atlantic Terminal Command with subordinate installations renamed Brooklyn Army Terminal and Hampton Roads Army Terminal. The newly activated Sunny Point, North Carolina, Army Terminal also is included.

New Orleans Port of Embarkation is now known as the New Orleans Army Terminal under the Gulf Terminal Command. This command includes Theodore Army Terminal, Theodore, Alabama.

On the West Coast the Ports of Embarkation at Seattle and San Francisco also have been renamed Army Terminals under the Pacific Terminal Command with headquarters at San Francisco.

The Infantry School, Fort Benning, Georgia, recently discontinued two course offerings—the Infantry Heavy Mortar Officer Course and the Infantry Operations, Intelligence and Reconnaissance Course. A two-week Infantry Officer's Common Orientation Course—now in the planning stage—is being considered to replace all present refresher courses.

The young man who enters the Army Reserve and completes six months of active duty training, may later become eligible to apply for a commission as a second lieutenant in the Army Reserve. Requirements include attaining the grade of sergeant while satisfactorily participating in reserve training and completing appropriate Army extension courses. The applicant must be between ages of 18 and 28, and physically, morally and professionally qualified.

In recognition of the importance of reserve affairs, the position of Assistant Secretary of Defense (Manpower and Personnel) has been redesignated Assistant Secretary of Defense (Manpower, Personnel, and Reserve). In addition, a Reserve Affairs Policy Division has been established within the Office of Personnel Policy. The new Division will parallel the Military Personnel Policy Division and the Civilian Personnel Policy Division.

Military options and obligations—including those contained in the Reserve Forces Act of 1955—are set forth in *Your Life Plans and the Armed Forces,* which brings together in one volume the educational and career opportunities available in the military services. A copy of the book and a teachers' handbook—prepared by the Defense Committee of the North Central Association of Colleges and Secondary Schools—is being sent to each senior secondary school.

With membership at an all-time high of 421,960, the National Guard has begun an intensive campaign to recruit 75,000 more men to meet authorized strength goals for the current fiscal year.

Dates and host commands for All-Army championship competitions during 1956 have been announced as follows: Basketball, 11–17 March, Fifth Army. Bowling (men and women), 27–29 March, Fourth Army. Triathlon and track and field, 1–3 June, Sixth Army. Swimming and diving, 26–29 July, Sixth Army. Golf and tennis (men's open, men's senior, women), 12–18 August, Third Army. Baseball, 16–22 September, First Army. Boxing, 1–6 October, Second Army.

Rising at the average speed of 1,800 feet per minute, an "express balloon" has been developed by the Army Signal Corps to collect weather data almost twice as fast as those now in general use. An airborne radiosonde which transmits vital weather statistics floats back to earth by parachute when the balloon bursts at a height of about 15 miles.

Medical Field Service School, Fort Sam Houston, Texas, has been redesignated Army Medical Service School. The former Army Medical Service Graduate School, Walter Reed Army Medical Center, also is redesignated as the Walter Reed Army Institute of Research.

Official Notes

PER DIEM ALLOWANCES. AR 35–3080 sets forth circumstances under which per diem allowances are payable when personnel are on field duty.

CAMG SPECIALIZATION. AR 616–170 prescribes and implements an area of specialization within the framework of career management to furnish qualified and experienced commissioned officers for the more specialized and professional phases of civil affairs/military government. Such specialization will include controlled duty assignments in several subareas.

Criteria for members of Civil Affairs/Military Government Reserve units are set forth in AR 140–108.

CHAPLAIN APPOINTMENTS. AR 601–125 sets forth the statutory authority, general policy, eligibility requirements and administrative procedures for the appointment of Chaplains in the Regular Army.

CONSERVATION OF MATERIALS. AR 754–10 establishes Department of the Army policies for conservation of materials, sets forth objectives of the materials conservation program, provides instruction and guidance in use of materials, and includes instruction for preparation of progress reports.

CATALOGING. AR 708–15 prescribes policies and procedures governing conversion to use of Federal identification data covering Army materiel in all functions of supply from original purchase to final disposition.

DECORATIONS AND AWARDS. Changes No. 5 to AR 672–15 establishes criteria and requirements for award of the Good Conduct Medal and Army of Occupation Medal.

VA EDUCATION AND TRAINING. Department of the Army Circular 350–2 clarifies rights and benefits of Army personnel under Public Law 7—84th Congress amending the Veterans' Readjustment Assistance Act of 1952. Among its provisions, this amendment extends the terminal date for education or training benefits for personnel who were in the active service on 31 January 1955 to a date eight years following first discharge or release from such active service after 31 January 1955, or 31 January 1965, whichever is earlier.

CHEVRONS. Department of Army Circular 670–3 contains instructions for supply and wearing of chevrons, both specialist and noncommissioned officers.

DIVING PAY. AR 35–1210 prescribes qualifications for payment of incentive pay for a member of the Army who has been awarded a Diver's Badge under AR 600–70.

COURIER SERVICE. AR 66–5 outlines the policy, organization and functions of the Armed Forces Courier Service (ARFCOS) and defines the responsibility in connection therewith. The service operates throughout the world for the Department of Defense and its agencies in the field.

ENLISTED ASSIGNMENTS. AR 611–254 establishes criteria and prescribes procedures for selection of enlisted personnel for assignment to ARWAF, SCARWAF, 1802d Special Regiment at the United States Military Academy, Armed Forces Special Weapons Project, Joint Task Force 7, 3d Infantry Regiment at Fort Myer, Virginia, and various other organizations.

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Improved Radio and Telephone For Field Communications

TWO NEW contributions toward better, swifter field communications—one being issued, the other under procurement—have been announced by Army Signal Corps.

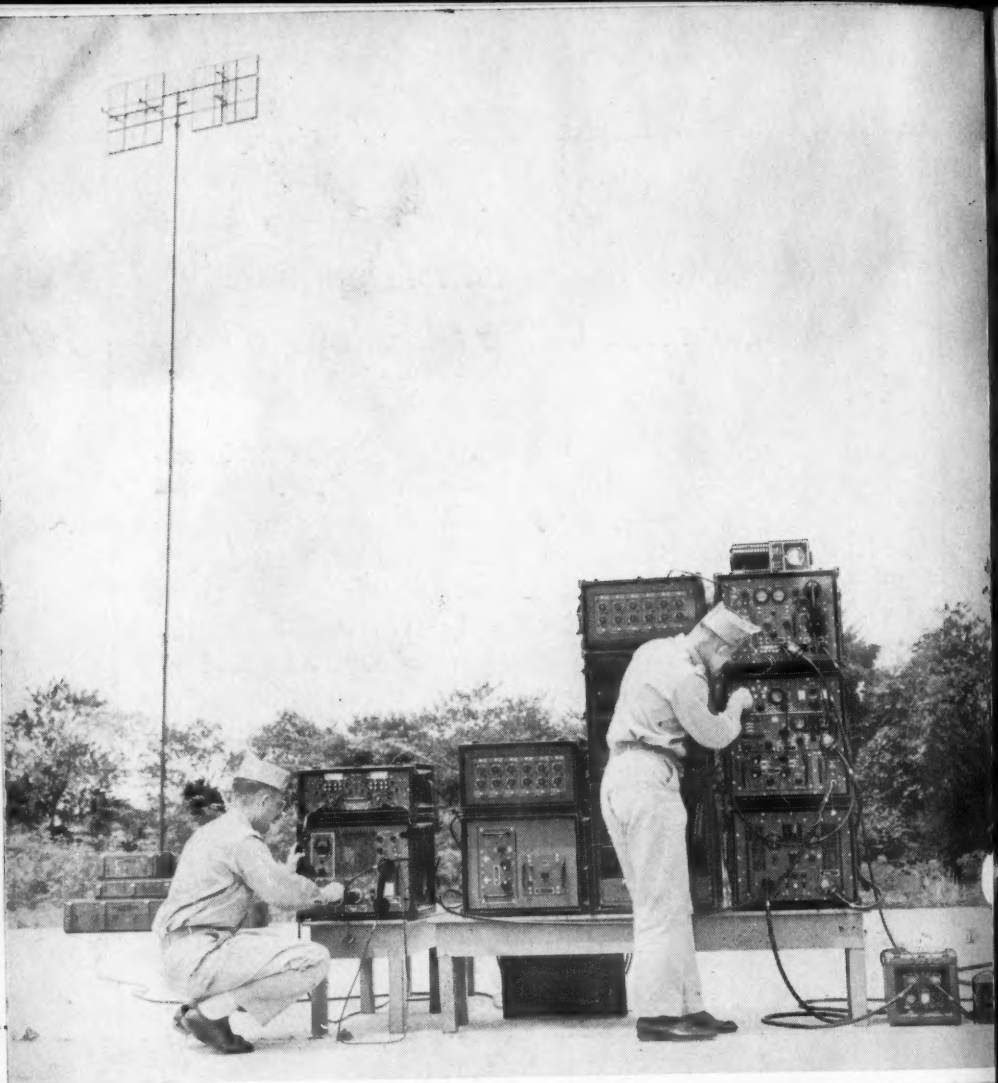
Now being issued to troops is Radio Set AN/TRC–24 and Telephone Terminal AN/TCC–3, which together provide a four-voice channel radio relay facility. When used with the AN/TCC–7, the new radio set will provide a twelve-voice channel. Besides being the first such tactical system to be issued, it also is the first to introduce automatic frequency regulation for tactical use. The equipment is designed to operate under any kind of climatic conditions. Back cover view (top) shows the AN/TCC–3 used with the AN/TRC–24.

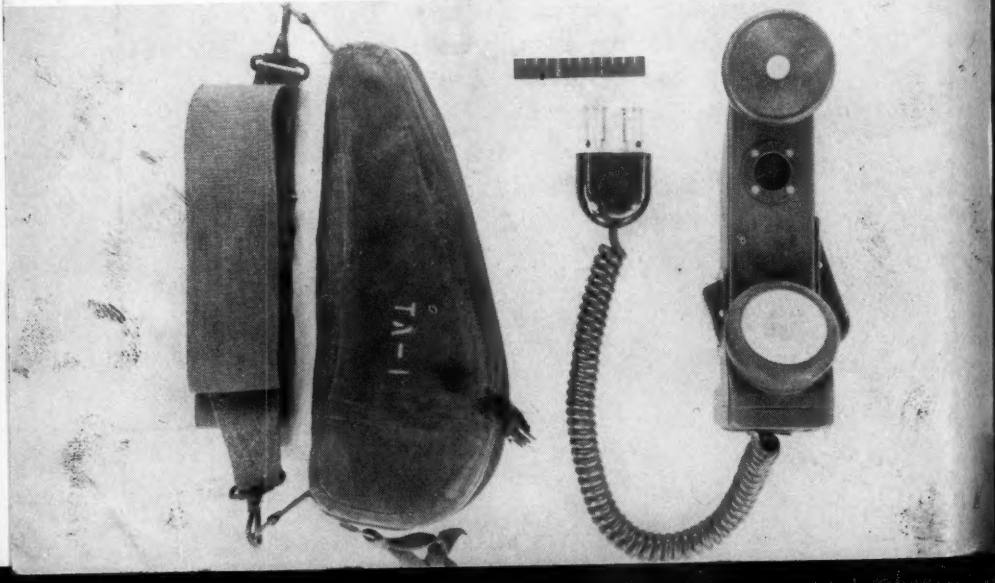
CURRENTLY under procurement is a new lightweight, sound-powered field telephone, the TA–1( )/PT. This is a complete talking and signalling device in handset form, with both audible and visual signals. In field tests under average conditions it has operated over ranges in excess of 20 miles, about four times that of existing equipment.

Blastproof and immersionproof features, plus the fact that it needs no batteries for operation, permits its use much closer to the frontlines. The unit also is well suited for operation under severe Arctic conditions.

Weighing a mere 2½ pounds, as compared to 10½ for the present TP–3, the new telephone is carried in a rubberized bag equipped with a zipper and carrying strap.

(For pictures of the new Radio and Telephone units, see back cover.)




TA-1